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CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

SPECIAL ISSUE

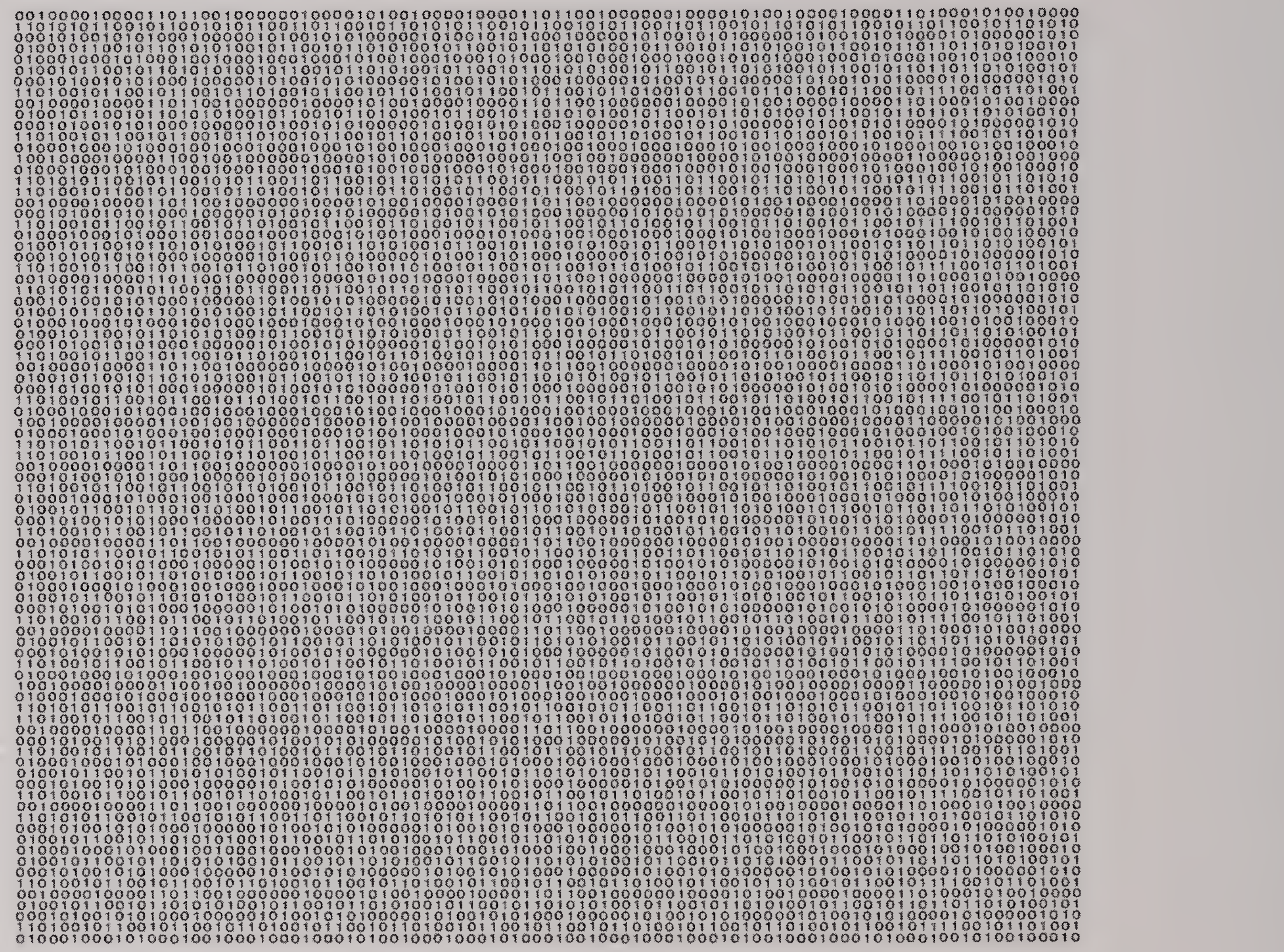
The Eighth Annual CIO 100

Practice Makes Perfect: Delivering Best Business Practices Where They're Most Needed

FedEx's
Dennis Jones

AN INTERNATIONAL DATA GROUP PUBLICATION

Your customer data has never really given you a clear picture of your customer.



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Decision support is one promise of information technology that has never been fully realized. Its aim is to help you uncover trends hidden in your databases, so you can manage information to satisfy customers and compete more vigorously.

Unfortunately, there's been no practical technology to make large-scale decision support possible. Companies that have tried haven't offered much beyond some hardware and a handshake. But now, Unisys presents the most comprehensive decision support solution in the industry. It's built around the *Open Parallel Unisys Server (OPUS)*– a joint Unisys and Intel initiative in scalable parallel processing. And it can help you **CUSTOMERIZE** your organization to be more responsive to those you serve.

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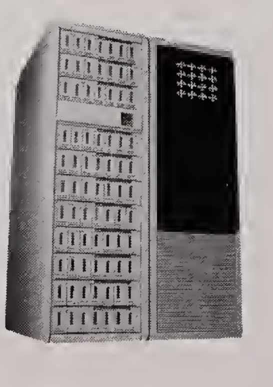

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– CIO Magazine Readers' Choice
*January 1995**

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There Seems To Be A Pattern Here.

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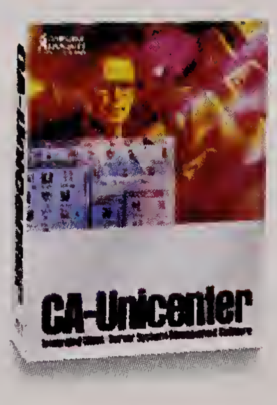

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**CIO Magazine* 1994 Readers' Choice Awards.

CIO

VOLUME 8, NUMBER 19

CIO 100 SPECIAL ISSUE

Best Practices

INTRODUCTION 26

All for the Best

In which we define best practices and our categories, describe our selection process and list the CIO-100 winners.

PROFILE: FEDERAL EXPRESS 32

Special Delivery

Federal Express Corp. has managed to burnish its best practices and maintain its lead since it became the first service firm to earn a Baldrige Award in 1990. By successfully updating processes in human resources, logistics and customer satisfaction, FedEx has molded itself into a model of best practice care and feeding. *By Richard Pastore*

Ship shape **32**
Cover photo by Marc Berlow, background enhancement by Harry Bartlett

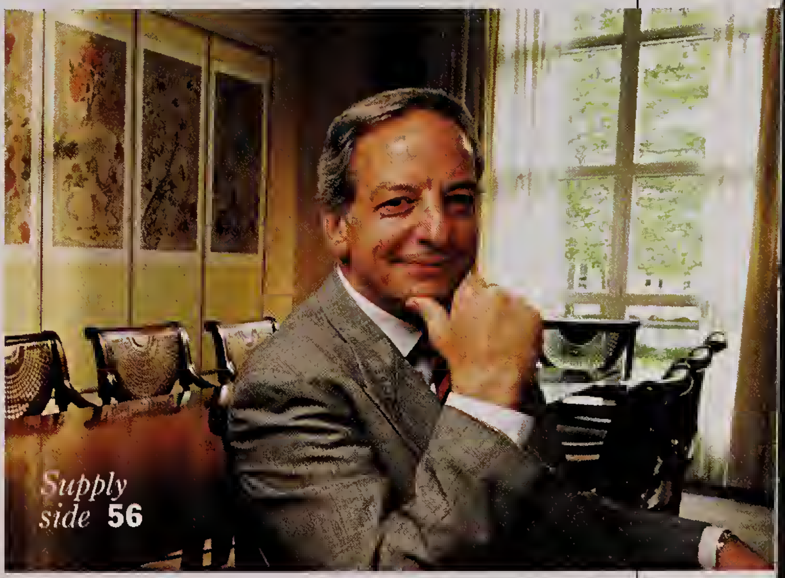
SUPPLY CHAIN 46

The Chain Gang

Successful management of the supply chain can save a company both money and time, but CIO-100 winners are taking it a step further. Using some innovative tactics and a variety of IT, they're pursuing—and achieving—a strategic advantage. *By E.B. Baatz*

Profile: Unlimited Partnerships

In its quest to stay ahead in the increasingly competitive medical-equipment industry, Becton Dickinson found that cultivating relationships with business partners—supported by IT—was the critical step. *By E.B. Baatz*



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Personnel Best

As workers enter the Knowledge Age, they find career paths that were once etched in stone are now impossible to decipher. Today's human resources managers have their work cut out for them. *By Megan Santosus*

Profile: The Learning Company

Raychem supports career development as well as product development. *By Megan Santosus*

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Workgroups 3.11 preinstalled, HP mouse and keyboard. [1]Source 1994 J.D. Power and Associates PC Customer Satisfaction Study.℠ Study conducted among business users and based on 1,528 user
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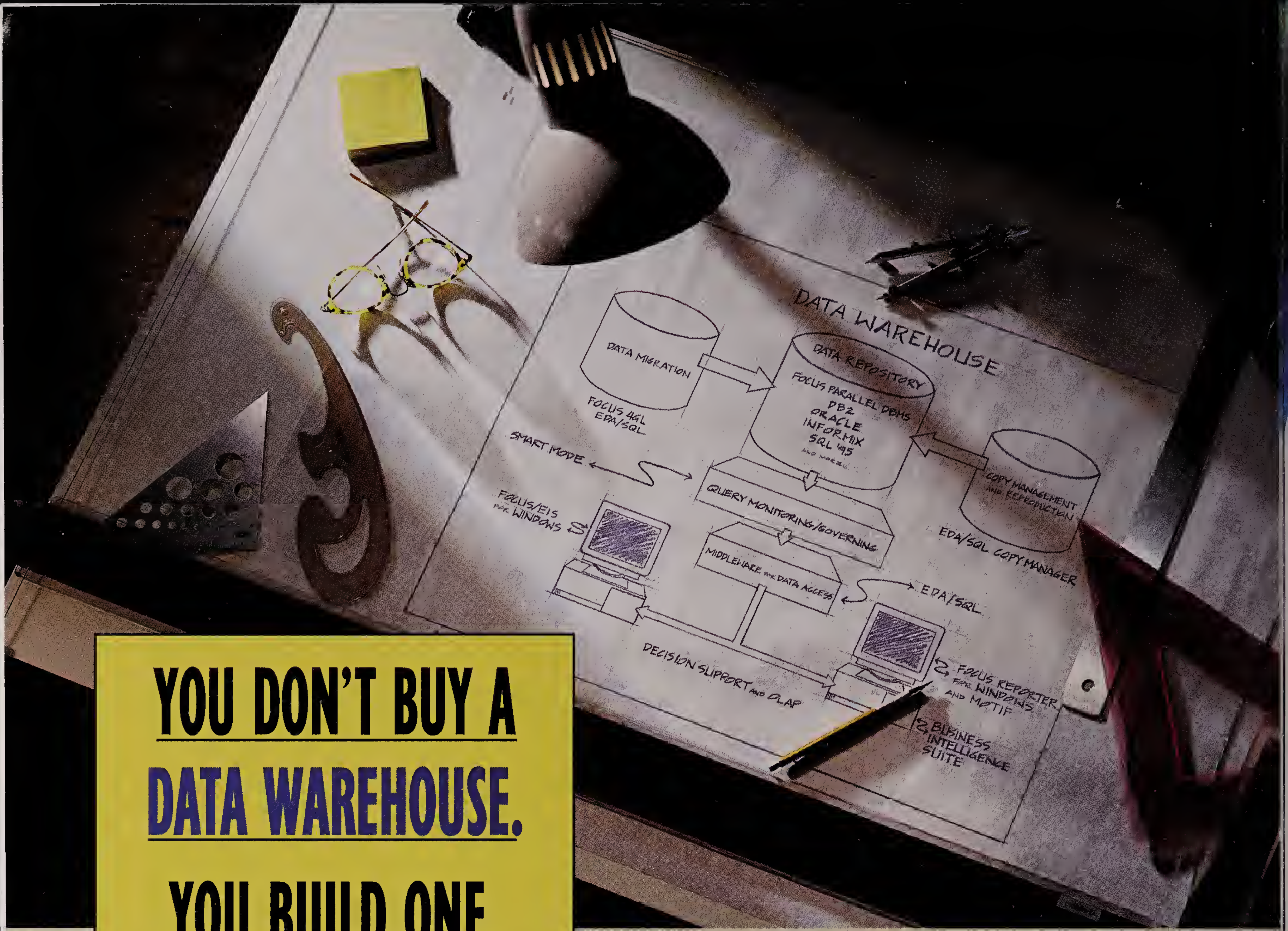
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YOU DON'T BUY A DATA WAREHOUSE. YOU BUILD ONE.

Creating a data warehouse is like building a new home on unchartered territory… you don't know what you're getting into until you start digging the foundation. But you can greatly increase your chances for success by following a few basic rules.

RULE #1: HIRE AN EXPERIENCED ARCHITECT

Data warehousing is simply a new name for accessing, migrating, and staging data for optimum decision support applications…all the things Information Builders has been doing longer and better than any other software/consulting firm in the industry. Our experienced staff of professionals provide complete consulting, planning, implementation and training from more than 35 offices in North America.

RULE #2: LEARN BEFORE YOU DESIGN

Why attempt to restage and restructure data until you learn how it's going to be utilized by end users? Information Builders' EDA/SQL® middleware technology offers your users transparent access to virtually any database on any computer platform. Once they have access to the data, you can analyze how they use it and pinpoint any potential problems. And with our EDA/SQL SmartMode™ system, you can monitor all database activities so you can develop your most important resources first, design systems that make sense, and enjoy immediate benefits. Best of all, EDA/SQL can extend data access beyond your warehouse database, transforming your entire enterprise into a "Virtual Data Warehouse."

RULE #3: USE THE BEST TOOLS

Thousands of the world's leading corporations use Information Builders' FOCUS 4GL for data migration and staging on more than 35 computer platforms. Our EDA/SQL Copy Manager lets you replicate data from over 60 databases and EDA/SQL Catalog Manager makes managing meta data easier than ever before. Most importantly of all, our FOCUS Reporter for Windows and FOCUS SMP (Symmetric Multi-Processor) provide a level of performance for client/server reporting and decision support simply not available with today's relational tools.

RULE #4: START ASKING QUESTIONS AND YOU'LL START GETTING ANSWERS!

If a data warehouse strategy is in your future, contact your local Information Builders branch office or call us. We'll answer your questions, register you for our FREE Data Warehouse seminar, or set up an appointment for a consultation and evaluation. **1-800-969-INFO.** In Canada call 416-364-2760.

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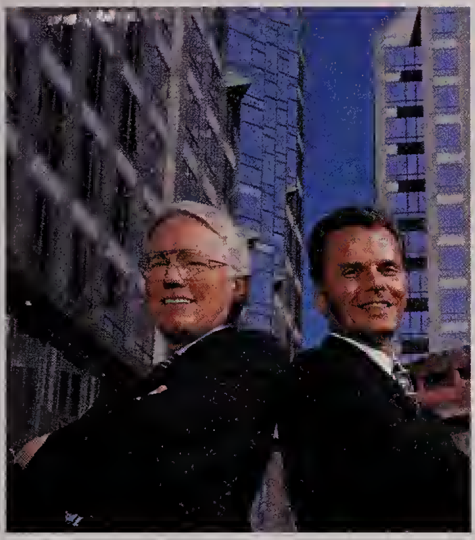

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The World Class

Political change and blurring borders are requiring that companies doing business abroad adopt a global mind-set. For this year's CIO-100 winners, success has meant some combination of strategic thinking and IT. *By Anne Stuart*

Profile: Guest Practices

By thinking globally and acting locally, Radisson has become one of the world's fastest-growing hotel chains.
By Anne Stuart

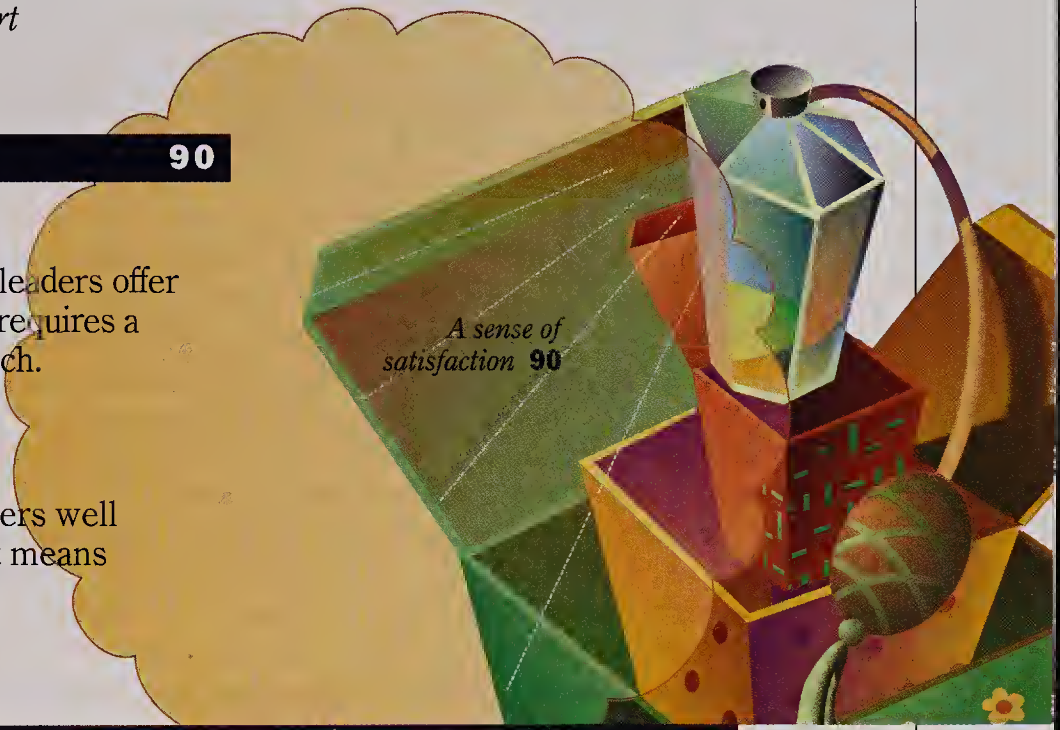
CUSTOMER SATISFACTION 90

Service Stars

Good customer service no longer cuts it. Today's leaders offer nothing less than "outrageous" satisfaction. This requires a certain fanaticism and a pervasive, layered approach.
By Carol Hildebrand

Profile: Satisfaction Guaranteed

Insurer USAA understands that serving customers well doesn't mean that things will never go wrong. It means being willing and able to respond when they do.
By Carol Hildebrand



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Accounting for Change

The era of basic bean counting is long gone. Today's finance and accounting operations are lean, mean and strategic—thanks in no small part to IT. *By Peter Fabris*

Profile: Inspired Accounting

With MUSE, hard numbers back up innovative ideas at Charles Schwab.
By Peter Fabris

Not your basic bean counting **110**

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Practicing Judgment

Best practices are only such in the eyes of beholders. Our own beholders were a distinguished panel of judges who lent their time and insight to choose among the best.

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- Spreading the word
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- Supply chain partnerships
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- Tracking expertise
- Japanese executives and IT

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The ranks of the Fortune 500 have changed dramatically in the past 40 years. Only one in four companies listed among the U.S. leaders four decades ago is still there today.

We can learn a lot from companies with staying power.

One quality that keeps exceptional companies on top year after year is the ability to develop and leverage best practices across the enterprise. Our eighth annual CIO-100 honors organizations that have earned reputations for best practices in one—or more—of five business categories: customer satisfaction, finance/accounting, global operations, human resources and supply chain management.

We chose these highly strategic, often cross-functional enterprise-wide business processes because they are the areas in which battles for competitive advantage will be waged and won.

Achieving "best practice" status in a single business function, however, won't help an organization maintain competitive advantage for long. You'll notice that the CIO-100 list numbers something less than 100. That's because companies like Federal Express, Motorola and Xerox merited inclusion in more than one category. Leading companies understand that only the powerful combination of several complementary and interdependent best practices throughout the enterprise can keep competitors at bay and assure long-term success.

This special issue is the culmination of extraordinary effort by many people. Senior Editor Richard Pastore managed the eight-month project from start to finish. Late last year he and our writing staff began contacting the 48 judges who eventually nominated more than 300 companies from which the winners were selected. In ensuing months he coordinated, motivated and steadfastly led the team of writers and editors in this long editorial journey.

Effective presentation of the words and images within these pages was easier said than done. But the result of the design team's creativity and dedication on this special effort—led by Graphic Designer Linda Golon—speaks for itself. Administrative Assistant Tracey Grogan, who oversaw the massive amount of detailed data entry and myriad administrative tasks, and researchers Sue Sudan and Carol Zarrow also played key roles in getting the CIO-100 off the ground.

Finally, congratulations to our CIO-100 winners. Their unflagging commitment to best practices and business excellence inspires us all.

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CIO

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SAS INSTITUTE INC.

VOLUME 5, NUMBER 1

B

TOOLS FOR MANAGING THE DATA WAREHOUSE

C

PLUS WAYS TO EXPLOIT THE NEWLY ACCESSIBLE DATA

THE SAS® MANAGEMENTREPORT

NEWS, TRENDS, OPINIONS, AND IDEAS FOR INFORMATION MANAGERS

C

FREE! BLUEPRINT FOR DATA WAREHOUSING SUCCESS FROM SAS INSTITUTE

D

DATA WAREHOUSING: THE BACK END IS JUST THE BEGINNING

HOW TO BUILD, MANAGE, AND EXPLOIT A DATA WAREHOUSE *(WE'LL GIVE YOU THE BLUEPRINT FREE)*

The strategy, says Randy Betancourt – SAS Program Manager, Data Warehousing – can be found in software that:

- **Offers a single–tool approach for integrating all the core technologies involved in data warehousing, from back-end access to legacy systems to front-end decision support and business intelligence capabilities.**
- **Holds down costs by capitalizing on resources you already have...and by seriously re-evaluating the need for an expensive DBMS.**

To meet the needs of business decision makers, information managers are looking for ways to provide direct access to a wide range of corporate data stored in many different sources and data formats.

In doing so, IT professionals face the challenge of making data easily accessible, without impacting the performance of vital operational systems or compromising data security. The solution they're turning to is data warehousing.

"Data warehousing is a strategy and a method for physically and logically separating operational data from decision support data. This decision support data is derived from the operational data, but is continually refreshed and readily accessible to end users, who can get to the business information they need without impacting operational systems," says Betancourt.

"At SAS Institute, we're helping business decision makers gain access to legacy data, then integrate and transform that data into meaningful information."

SAS Institute is "the only vendor out there that's providing a complete end-to-end software solution for accessing, managing, analyzing, and presenting data," asserts Betancourt, who points to the SAS® System of software's leadership role in three major areas.

(continued on next page)

ACCESS TO LEGACY DATA AND TRANSFORMATION TOOLS

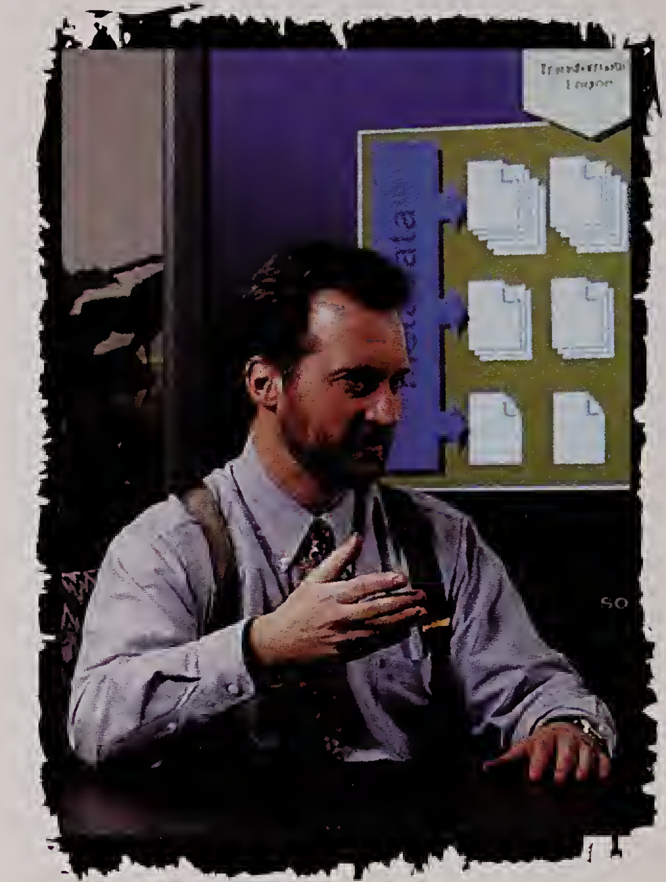
"The SAS System grew up in the mainframe environment," says Betancourt, who quickly adds that SAS software's hardware-independent structure now takes it seamlessly from Big Iron to your favorite desktop. "We have a strong affinity for legacy data such as IMS, IDMS, CA-DATACOM/DB®, DB2®, VSAM, and sequential files. And we've made these data stores readily accessible, since there's a substantial investment there."

Direct links to a variety of data sources are built into the SAS System, together with a fourth-generation language that makes transforming data as straightforward as possible. In fact, SAS software provides a relational model for data management similar to the commercial relational database management system (RDBMS) suppliers.

TOOLS FOR MANAGING THE DATA WAREHOUSE

"In setting up a data warehouse, many customers assume their first decision is to buy a relational database management system to store the data for the data warehouse," says Betancourt. "Truth is, data warehousing simply does not require many of the features of a database management system."

He explains that "relational database management systems have been optimized for online transaction processing – with facilities such as two-phase commit, rollback and recovery, and other database features. Data warehouses, on the other hand, are intended to be *read only*. There is no update that takes place from the user perspective. Data warehouses are loaded from transaction systems and periodically refreshed from the incremental transactions. Many of the facilities associated with traditional database management systems are merely overhead in a data warehousing environment."



Randy Betancourt, SAS Institute Program Manager for Data Warehousing

Betancourt adds that SAS data structures are relational in nature and have all the requisite features necessary for data warehousing including indexing, compression, and a security model.

"SAS software has the right capabilities, but doesn't consume overhead for facilities that are not needed," he explains. "Coupled with the fact that most companies have SAS software already installed, you could say many organizations are well on the way in reaping the benefits of data warehousing without having to invest in new technologies. And, even if an organization is licensing SAS software for the purpose of data warehousing, the cost – in relation to the cost of a full-fledged database management system – is much less."

PLUS WAYS TO EXPLOIT THE NEWLY ACCESSIBLE DATA

"The net takeaway from building a data warehouse is empowering users with information to make better, more informed business decisions," says Betancourt. "SAS Institute has always excelled in the area of decision support. There is no other company with more experience in delivering critical business information to decision makers across the enterprise."

He adds that most vendors offering tools for exploiting the data warehouse support Windows™, and occasionally OS/2® and UNIX®, but that SAS Institute's software runs seamlessly across more than 25 hardware platforms from the desktop to the Data Center.

"Any application written in one environment can be easily executed in any of the others," Betancourt explains, "with each part of an application running where it makes the most sense. So, while providing a complete end-to-end solution for data warehousing, the SAS System addresses an organization's client/server computing issues as well."

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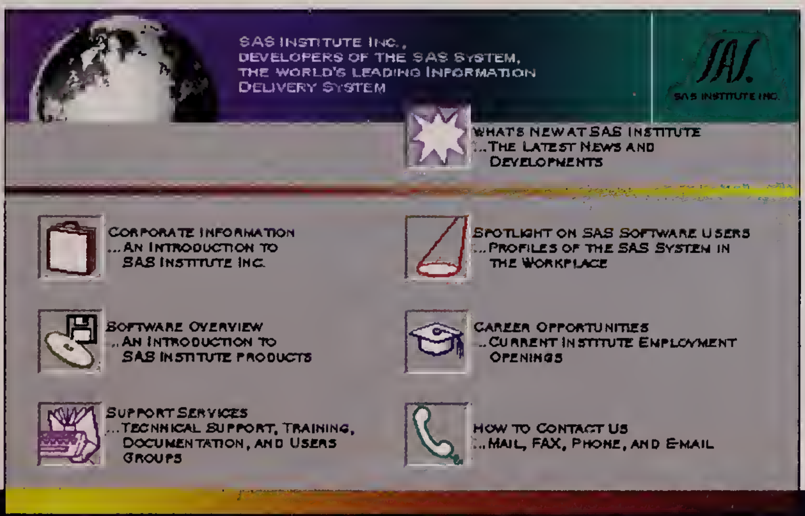

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SAS INSTITUTE OFFERS FREE BLUEPRINT FOR DATA WAREHOUSING SUCCESS...

"Building a successful data warehouse requires a proven plan and a solid foundation," says Data Warehousing Program Manager Randy Betancourt. "That's why we are pleased to offer information managers a blueprint for simplifying data warehouse construction, and for saving money in the process."

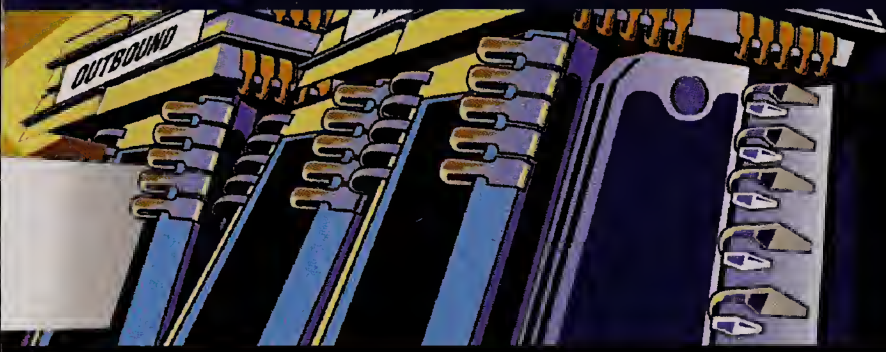
The 8-page plan, called *A Blueprint for Data Warehousing Success*, is available FREE.

...PLUS A FREE SUCCESS STORIES VIDEO

We've compiled success stories from leading companies that have initiated data warehousing strategies.

To receive the blueprint, the video, or both, contact SAS Institute at ***919-677-8200.***

You can also request these materials using the attached postpaid reply card.



DATA WAREHOUSING SURVEY

We'll report your responses in an upcoming issue of SAS® Management Report

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1. Do you see data warehousing on the horizon at your company?
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   ____
   ____
   ____
   ____
3. Are you using SAS software in your data warehousing projects?
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PERSPECTIVE

RANDY BETANCOURT

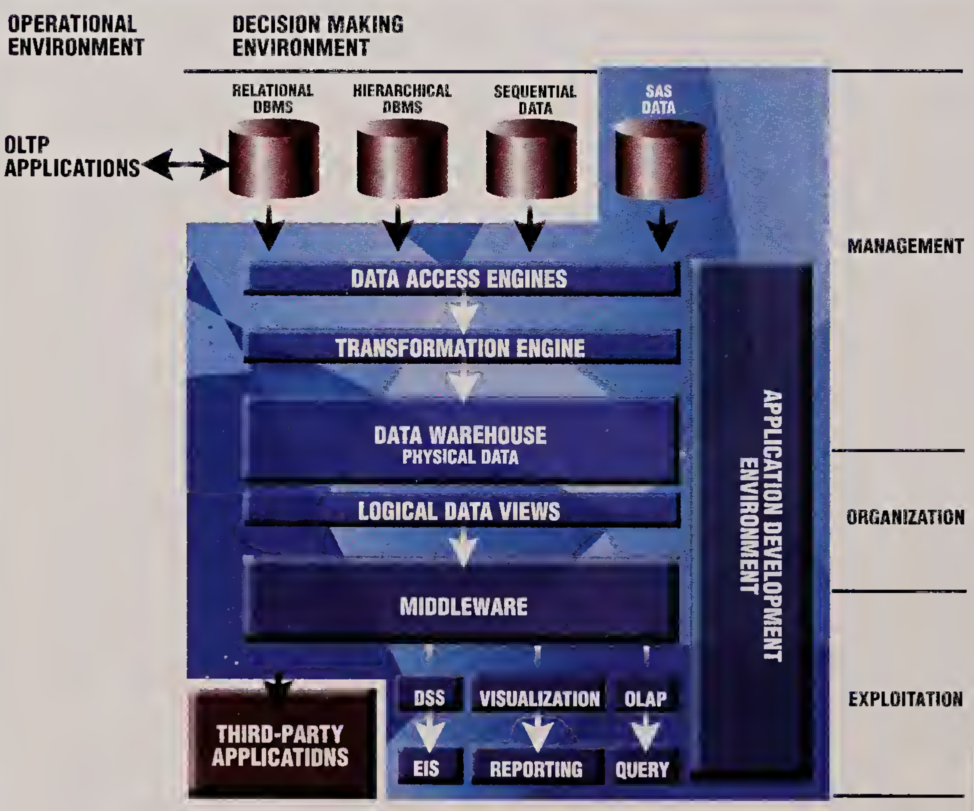
DATA WAREHOUSING: THE BACK END IS JUST THE BEGINNING

I'm often asked to sum up SAS Institute's philosophy for building a data warehouse. Simply put, we believe the goals of data warehousing are:

- **To present a "single version of the truth" that is consistent, secure, maintainable, current, and easily accessible for a wide range of business users.**
- **To reduce interruptions of IS personnel, allowing them to concentrate on effective data delivery strategies.**
- **To empower business users to become more self-sufficient in meeting their own information needs.**

◆

The SAS System Three-Tier Computing Architecture



To achieve these goals, we've developed our own blueprint for data warehousing success. It's a blueprint that enables organizations to leverage their investments in existing technology as well as exploit their existing SAS modules. Take a look at this blueprint and you'll discover that SAS Institute is the *only* provider of end-to-end data warehousing solutions. Here's a preview:

The Back End: Accessing the Data

The first step in building a data warehouse is accessing operational data from wherever it resides, and in whatever format it embodies. SAS Institute provides a powerful 4GL coupled with access methods that tap directly into a variety of legacy databases – more than 50 different data structures across diverse computing environments, from xbase files on the desktop to DB2® on the mainframe.

Managing the Data: Preparing for Business Analysis

Once accessed, data must be transformed into a consistent, integrated form. This process involves cleaning, reconciling, de-normalizing, and summarizing data – and then loading the data into logical data views that can be surfaced into a variety of analytical and reporting applications.

The Front End: Exploiting the Data

A data warehouse without sophisticated access, analysis, and reporting capabilities is like a library without a card file. SAS Institute software provides comprehensive tools in all these areas. Once you have the data in the warehouse, you can rely on SAS software's integrated capabilities for data query and reporting, OLAP/multi-dimensional analysis, data visualization, presentation graphics, and more.

From front-to-back, SAS Institute provides the breadth of functionality necessary for successfully implementing a data warehouse. Our free data warehousing blueprint explains it all...see page C for details.

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If you think "veronica" and "archie" are comic strip characters, you have a lot of reading to do.

If you think a "gopher" is an animal that ruins your garden you have a lot of reading to do.

If you think the "World Wide Web" is a sinister take-over plot by mutant spiders, you have a lot of reading to do.

If you think a "flame" is something you sing around during a campfire, you have a lot of reading to do.

If you think a "usenet" is a fishing device, you have a lot of reading to do.

If you are charged with laying out a strategic business plan for the Internet, you have a lot of reading to do.

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WebMaster's mission: to deliver solutions-oriented information that will enable IT executives and webmasters to effectively exploit the Internet for business value and profit. Case studies that explore successful and unsuccessful applications; interviews with prominent webmasters; stories that address corporate concerns, such as standardization and ROI; columns addressing legal, regulatory and security issues; how-to strategies; and new products and services will all be covered in WebMaster.

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systems and languages. And with Composer, you don’t have to be.

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“Composer by IEF is very exciting. We have converted models, converted code and have not had any problems. We have been having a great time with all the new features.” – **PSI Energy**

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“TI provided a tool and methodology which allowed us to keep IS resources firmly committed to business issues as opposed to the technical complexities of developing a client/server application.” –**Travelers Insurance**

Judges were recently so impressed with Composer by IEF, they gave Texas Instruments and Travelers Insurance the DB/EXPO ’94 RealWare Award for “Client/Server Computing in Support for Mission-Critical Business Opportunities.”

The excitement of Composer by IEF is captured in a white paper about enabling business change through information technology. A copy is yours when you call our global network of sales and support offices at **1-800-838-1843, ext. 2300**.

EXTENDING YOUR REACH™

TEXAS
INSTRUMENTS

LETTER FROM THE PUBLISHER

"You've got to combine best practices with innovation to really accomplish world-class results."

–Frederick W. Smith
Chairman, President and CEO
Federal Express Corp.

If you're looking for world-class best practices ideas to use as a model or benchmark in your company, welcome to the 1995 CIO-100. Our August tradition continues with a look at organizations that exemplify excellence in business practices in the areas of customer satisfaction, supply chain/logistics management, human resources, finance/accounting and global operations. Why isn't information management on the list? We believe IT has become such an integral enabling part of business today that it is woven into the fabric of the five other categories.

As you strive to emulate these outstanding companies, keep this in mind: Imitation alone will not give your company a competitive advantage, especially if your competitors are using the same models. Building upon these models and infusing your company's strengths and innovations can give you the edge.

And speaking about edges, visitors to our World Wide Web site (*http://www.cio.com*) got a head start in learning about how these organizations are employing innovative best practices solutions. Short articles, containing sneak previews of the CIO-100 winners, were made available throughout July to the many thousands of executives who use the CIO Web site on a regular basis.

P.S. Original, value-added editorial is available at the CIO Communications Web site. By adding *http://www.cio.com* to your Web browser's "bookmark," you can easily connect to online versions of *CIO* Magazine and *WebMaster* Magazine. You can also check out upcoming conferences from CIO Executive Programs. And for all you high-tech marketers, there is a section devoted especially to you.

PHOTO BY WEBB CHAPPELL

Coming In CIO

Airport '95

The riveting visuals of inadvertently airborne Denver baggage gave everyone (but the Denver airport planners) some comic relief last year, but managing an airport infrastructure is a formidable feat—at the heart of which lies plenty of IT. *CIO* profiles the Houston International Airport and examines the role its CIO plays in making the many and varied planes run on time.

Good Morning, Vietnam

Vietnam is widely viewed as a hot emerging market in the global arena today, and many companies are eager to establish some presence there. We'll look at the current business climate in Vietnam and discuss what organizations hoping to stake some claim there can expect to find—or not find—when it comes to IT.

Building Bridges

CIOs and their departments have historically remained quite separate from the folks in R&D. But in some companies, the two are beginning to talk to each other more. *CIO* will look at the changing relationship between IS and R&D: how it's changing, how much it's driven by new pressures on R&D, and how IS can contribute to, collaborate with and support R&D.

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TRENDLINES

BEST PRACTICE PROPAGATION

PREACH WHAT YOU PRACTICE

When a company is large—or largely decentralized—it's difficult to see everything that's going on in the organization and be completely aware of internal developments.

But it's a costly shame when blind spots obscure best practices, which may languish in a remote part of the enterprise when they ought to be recognized and propagated elsewhere in the company.

Unfortunately, many organizations fail to wring wider rewards from their own existing best practices. A two-year study of 45 firms' propagation efforts found it not uncommon for performance gaps between business units to reach millions of dollars, an indication that the best practices of the better-performing unit are not transferring to the other. The study, conducted by The European Institute of Business Administration (INSEAD) in France and the Houston-based American Productivity & Quality Center's International Benchmarking Clearinghouse, identified four factors contributing to the success or failure of propagation: how well the practice is understood, the quality of the relationship between the source and recipient, the absorptive capacity of the recipient and the level of motivation of the recipient.

How can companies shift the odds in their favor? Formal communication linkages would help, says Michael Spendolini, author of *The Benchmarking Book* and founder and principal of organizational development consultancy MJS Associates in Laguna Beach, Calif. Online systems and benchmark databases and repositories would all make the best practice information more widely available. Xerox, IBM and Eastman Kodak leverage such communication aids, he says.

Yet some firms feel that best practices are too short-lived and that it would be of little use to archive them. "What I view today as best-in-class given my definition of a problem, in six months may be very different," says Kate Leibfried, principal and managing director of the benchmarking and performance measurement practice at EDS Management Consulting Services in New York and co-author of *Benchmarking: A Tool for Continuous Improvement*. "It becomes less relevant over time."

Federal Express Corp., a firm in which best practice benchmarking is handled locally by departments, doesn't believe in archiving either. But the Quality Team Tracking System, an online data-sharing system that will capture information on internal practices, is in the works. "We have quality teams working on unique problems, and we want to capture the final results and make them accessible in a database," says Michael Reed, managing director of quality and process improvement. "If you have a subject and you want to know what improvement efforts are underway, that information will be available."

QUALITY'S DIVIDENDS

Investing in the five whole-company winners of the 1994 Malcolm Baldrige National Quality Award would have yielded a 188 percent return in a recent six-month period, according to a recent article in the newsletter *Challenges*, published by the Council on Competitiveness. Hypothetical investments by the National Institute of Standards and Technology of $1,000 each in Eastman Chemical Co., Federal Express Corp., Motorola Inc., Solectron Corp. and Zytec Corp. outperformed the Standard and Poor's 500, which yielded a 28 percent return over the same period.

In the meantime, top officers at FedEx consider it part of their jobs to find best practice nuggets that might germinate in other parts of the business. For example, a new field station courier-route planning system is based on technology that Chairman Frederick W. Smith had been introduced to years ago and had used in air scheduling at FedEx. He asked the air contingent to help replicate the system for the courier group.

Dennis Jones, senior vice president and CIO at FedEx, sees himself as a quarterback scanning the field before he throws the ball. "I have to anticipate where the action is going to occur and know where the [knowledge] gaps are," he says. For instance, Jones found a user in an international unit working on a problem that another unit had solved several months before, and the two are now sharing research. "One reason we have a centralized IT function is to avoid the type of disconnects [decentralized companies] have to deal with."

–Richard Pastore

ILLUSTRATION BY MARY ANNE LLOYD

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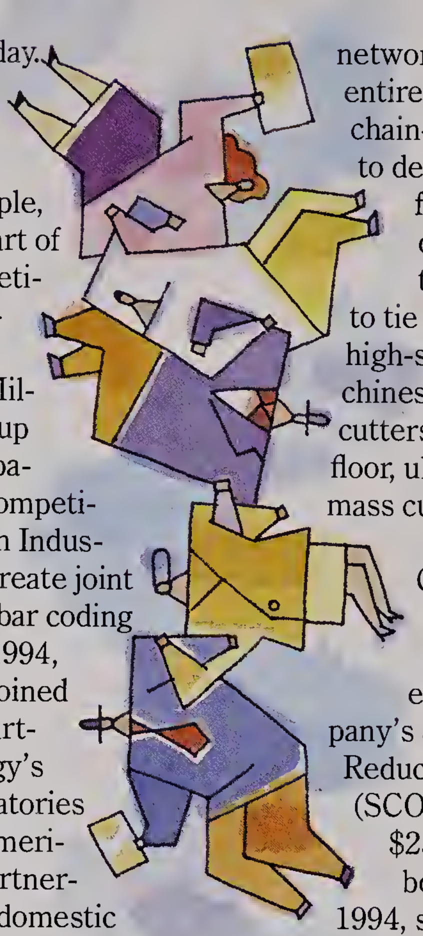
CIO 100

TRENDLINES

SUPPLY CHAIN

STRIKING MATCHES

One of the hardest parts of integrating the supply chain comes down to an old-fashioned management technique: partnering. "Without question, integrating the supply chain requires getting closer to your customers, your suppliers and, in some cases, even your competitors," says Thomas G. Gunn, author of *In the Age of the Real-Time Enterprise* and a client partner of the AT&T Solutions Group, a management consultancy in Washington. The 1995 CIO-100 is filled with companies that have taken the old partnership paradigm and redefined it for today.



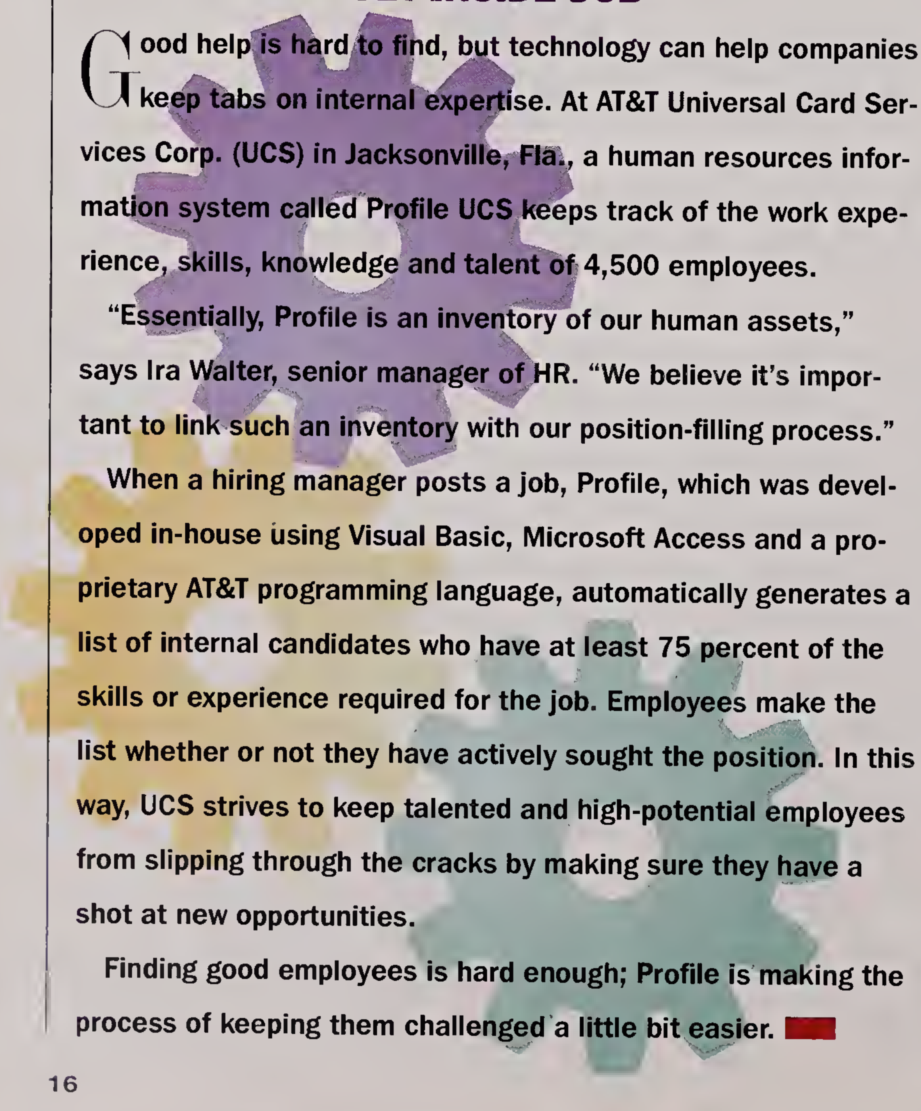
Textile manufacturer Milliken & Co., for example, has made an art of turning competitors into partners. In 1986, CEO Roger Milliken teamed up with the company's former competitor, Burlington Industries Inc., to create joint standards for bar coding and EDI. By 1994, Milliken had joined with the Department of Energy's national laboratories to form the American Textile Partnership. With 31 domestic textile companies and a $20 million investment, the idea is to develop a new computer network that links the entire textile supply chain—from retailers to designers to manufacturers to fabric dyers. Eventually, this group hopes to tie the network to high-speed sewing machines and rapid fabric cutters on the factory floor, ultimately enabling mass customization.

At Chrysler Corp., partnering with suppliers continues to evolve. The company's Supplier Cost Reduction Effort (SCORE) contributed $250 million to the bottom line in 1994, says Thomas T. Stallkamp, vice president of procurement and supply. SCORE uses an electronic network that allows suppliers to communicate directly with the procurement, engineering and finance departments at Chrysler. Suppliers suggest ways to save money before the new car is designed; in return, Chrysler shares any resulting savings with them.

For Baxter International Inc., a health-care products manufacturer and distributor, the name of the game has been partnering for profit with customers. Baxter has spent the last three years reengineering its inbound and outbound logistics. Now it offers a stockless inventory management service to its hospital customers. In this program, Baxter manages a hospital's inventory of things like gauze and sutures, delivering supplies just in time several times a day from a nearby warehouse. The result? In 1994, Baxter saved 65 participating hospitals $61.4 million. Baxter gets paid for supplying the service and reaps the added benefit of being a sole-source supplier for the products it stocks.

"It's our core competency to manage the supply chain," says Timothy D. Houghton, director of inbound operations for U.S. distribution. "It's the hospitals' core competency to manage patient care." *–E.B. Baatz*

AN INSIDE JOB



Good help is hard to find, but technology can help companies keep tabs on internal expertise. At AT&T Universal Card Services Corp. (UCS) in Jacksonville, Fla., a human resources information system called Profile UCS keeps track of the work experience, skills, knowledge and talent of 4,500 employees.

"Essentially, Profile is an inventory of our human assets," says Ira Walter, senior manager of HR. "We believe it's important to link such an inventory with our position-filling process."

When a hiring manager posts a job, Profile, which was developed in-house using Visual Basic, Microsoft Access and a proprietary AT&T programming language, automatically generates a list of internal candidates who have at least 75 percent of the skills or experience required for the job. Employees make the list whether or not they have actively sought the position. In this way, UCS strives to keep talented and high-potential employees from slipping through the cracks by making sure they have a shot at new opportunities.

Finding good employees is hard enough; Profile is making the process of keeping them challenged a little bit easier. ▬

MIND THE GAP

Japanese companies are world leaders in the production of consumer electronics and computer components. But Japanese executives are less likely than their American counterparts to use a computer or understand IT, according to a study by the Fujitsu Research Institute, a subsidiary of the Fujitsu Ltd. electronics company of Tokyo, and Fuld & Co., a Cambridge, Mass., research firm. The study, which found that Japanese senior executives are generally "technologically illiterate," suggests that this difference affects not only a Japanese company's application of IT to its own business but its overall competitiveness as well.

ILLUSTRATION BY ROBIN JAREAUX

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The company's bought a lot of high-priced technology with your input. Trouble is, when all this equipment isn't effectively orchestrated, people waste time or miss opportunities – and you hear about it.

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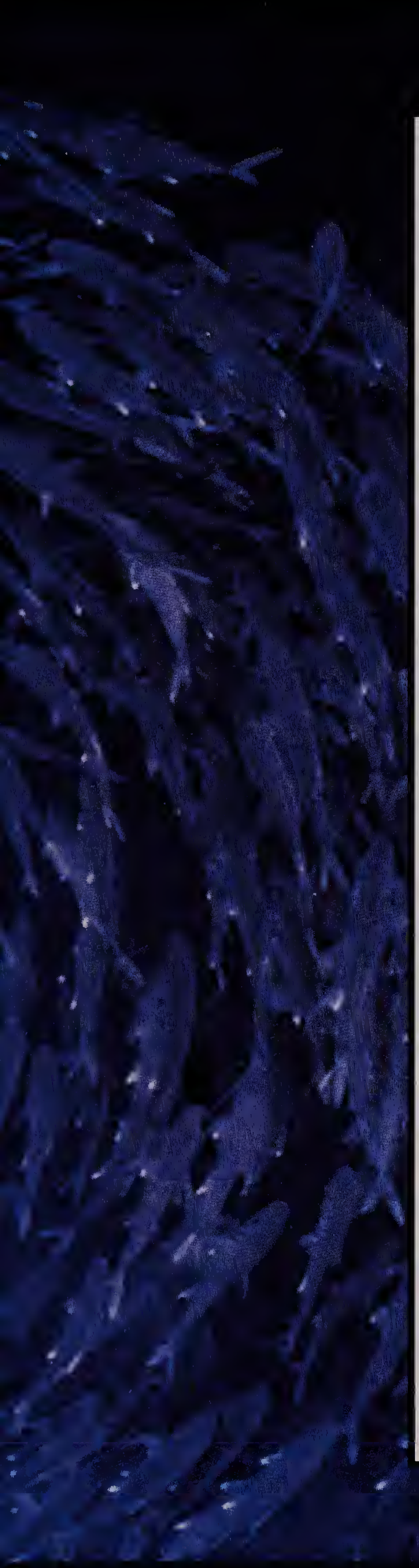

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BEST PRACTICE AWARDS

DOUBLE TAKE

CIO isn't the only organization that sees value in singling out best practice companies. Arthur D. Little Inc., the consulting firm based in Cambridge, Mass., has simultaneously been conducting its annual Best of the Best program to recognize organizations for best practices in five critical business processes. Two of the five areas are similar to categories we chose to focus on—supply chain practices and customer management. (The others are business-process redesign, manufacturing, and product and technology management.) The rationale for ADL's effort is to encourage companies built around hierarchical functions to learn from firms that have achieved success through best practices.

Best of the Best judges included ADL consultants, some of whom also helped choose the 1995 CIO-100 honorees, as well as leading academics, analysts and publishers. A striking overlap between Best of the Best and CIO-100 winners—14 companies earned both awards in either the supply chain or customer management categories—adds validation to both sets of lists. For full information on Best of the Best winners chosen in all categories, contact ADL at 617 498-5000.

In the supply chain category, ADL recognized the following:

Baxter International Inc.
Black and Decker Corp.
Chrysler Corp.
Ford Motor Co.
General Electric Co.
Home Depot Inc.
Limited Inc.
McDonald's Corp.
Motorola Inc.
Nissan Motor Manufacturing Corp.
The Procter & Gamble Co.
SmithKline Beecham
Southwest Airlines
Square D Co.
Texas Instruments Inc.
Toyota Motor Manufacturing USA Inc.
AB Volvo
W.W. Grainger Inc.
Wegmans Food Market Inc.
Xerox Corp.

ADL honored the following organizations for their superior customer management practices:

American Express Co. Inc.
British Airways
Citibank
Federal Express Corp.
Fidelity Investments Inc.
Four Seasons Hotel Ltd.
General Electric Co.
Hewlett-Packard Co.
Home Depot Inc.
Intuit Inc.
L.L. Bean Inc.
Lands' End Inc.
Lexus Division, Toyota Motor Sales USA Inc.
MBNA America
MCI Telecommunications Corp.
ServiceMaster Co. LP
Staples Inc.
Taco Bell Worldwide
United Services Automobile Association
Whirlpool Corp. ■

VIRTUAL BENCHMARKING

Benchmarking one business process can be bewildering, but consider trying to benchmark something as complicated and all-encompassing as a corporate supply chain. The sequence of events involved in buying raw materials, making a product and distributing the product to customers is rife with benchmarking possibilities.

For folks who want to benchmark the supply chain practice but don't have the time or resources, Professor Robert M. Monczka at Michigan State University's Eli Broad Graduate School of Management has a solution. His Global Electronic Benchmarking Network (GEBN) includes 200 Fortune 500 manufacturing and technology companies in 22 countries that have contributed data on their leading-edge practices. Now GEBN is releasing data on strategic supplier alliances and best commodity purchase strategies—the first two of 12 modules in the benchmarking study—to its member companies.

"We are building composite profiles of the most advanced strategies...including implementation road maps and procedures," says Monczka. Every quarter, member companies respond via the Internet to detailed questionnaires, which are then collated and analyzed by Monczka and his team. The resulting report includes best-case examples as well as failures and lessons learned. After all 12 modules have been completed, the process will be repeated ad infinitum, bringing every company up another level as the benchmarked information is incorporated into new management strategies and techniques.

To join GEBN as a partner company, the fee is $3,000 per year. For information, contact Monczka at 517 432-2086 or via the Internet at *sourcres@msu.edu*. The GEBN World Wide Web site will debut in September 1995. ■

ILLUSTRATION BY MARY ANNE LLOYD

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EXPRESS ROUTING LETS YOU INTEGRATE SNA AND LAN TRAFFIC ON A SINGLE NETWORK, WITHOUT COMPROMISE.
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SNA
IPX
NETBIOS
IP

How Long Have You Waited For This?

For most of us, it probably seems like forever that organizations have been trying to integrate a mixture of old and new, centralized and distributed networking protocols to solve today's business-critical needs. But with mixed results.

Why?

Well, let's just say there are problems. Delay problems. Delay variation, too. Even loss of data. And problems of network availability.

Not a pretty picture.

Fortunately, Ascom Timeplex has developed an internetworking architecture that lets you integrate SNA and LAN data into a single network with absolutely no compromise in quality and service.

It's called Express Routing.™ It allows you to prioritize individual data streams, making it a bandwidth-efficient, high-performance alternative to many other infrastructures. It's easily managed and remarkably simple to install.

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Call for information now.

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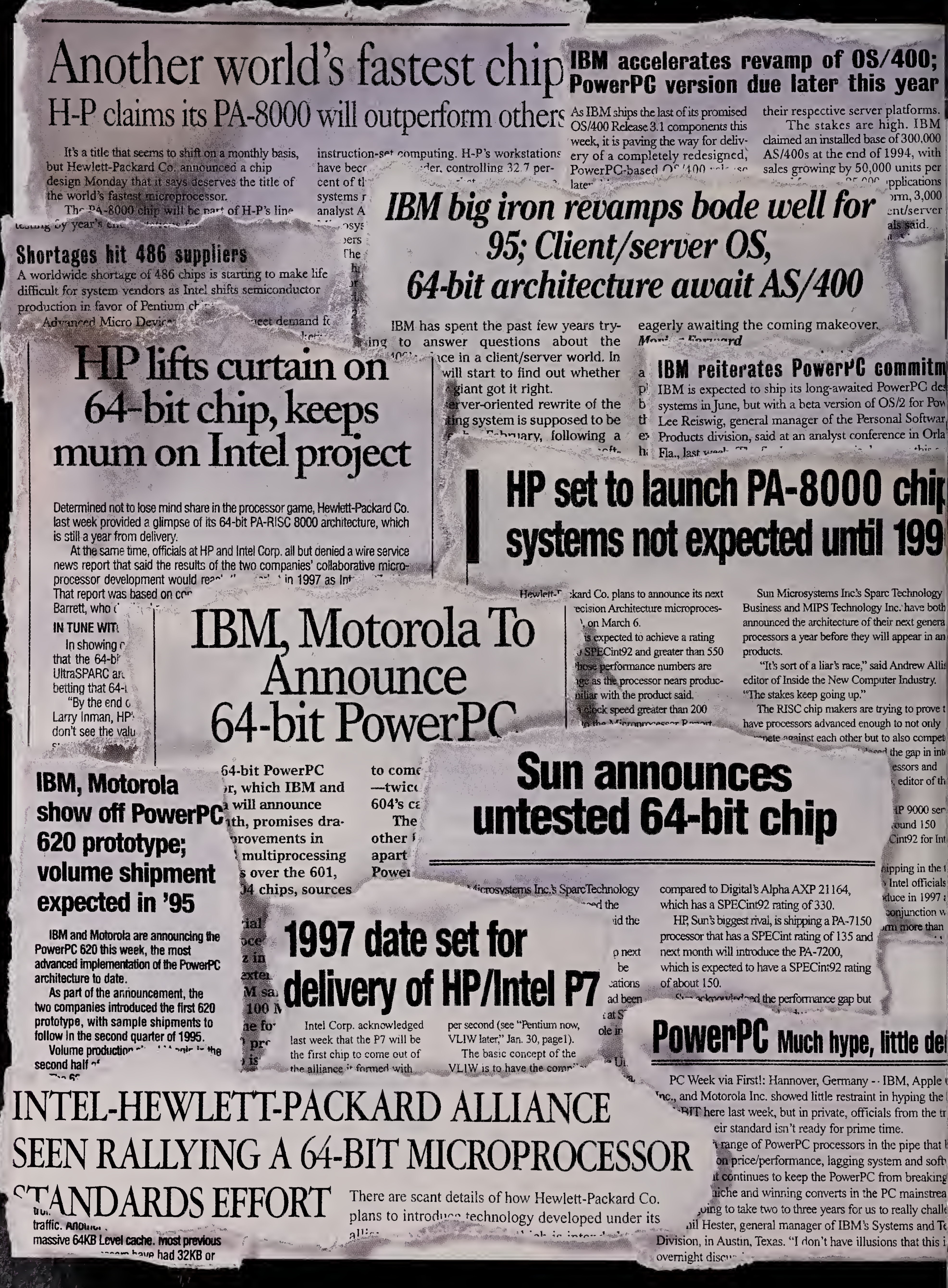

Another world's fastest chip
H-P claims its PA-8000 will outperform others

It's a title that seems to shift on a monthly basis, but Hewlett-Packard Co. announced a chip design Monday that it says deserves the title of the world's fastest microprocessor.

The PA-8000 chip will be part of H-P's line

instruction-set computing. H-P's workstations have bec der, controlling 32.7 percent of t

systems

analyst A

Shortages hit 486 suppliers

A worldwide shortage of 486 chips is starting to make life difficult for system vendors as Intel shifts semiconductor production in favor of Pentium ch

Advanced Micro Devic eet demand f

IBM accelerates revamp of OS/400; PowerPC version due later this year

As IBM ships the last of its promised OS/400 Release 3.1 components this week, it is paving the way for delivery of a completely redesigned, PowerPC-based

later

their respective server platforms.

The stakes are high. IBM claimed an installed base of 300,000 AS/400s at the end of 1994, with sales growing by 50,000 units per

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als said.

IBM big iron revamps bode well for 95; Client/server OS, 64-bit architecture await AS/400

IBM has spent the past few years trying to answer questions about the

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will start to find out whether

giant got it right.

erver-oriented rewrite of the

ing system is supposed to be

February, following a

eagerly awaiting the coming makeover.

HP lifts curtain on 64-bit chip, keeps mum on Intel project

Determined not to lose mind share in the processor game, Hewlett-Packard Co. last week provided a glimpse of its 64-bit PA-RISC 8000 architecture, which is still a year from delivery.

At the same time, officials at HP and Intel Corp. all but denied a wire service news report that said the results of the two companies' collaborative microprocessor development would rea in 1997 as Int

That report was based on co

Barrett, who

IN TUNE WIT

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UltraSPARC ar

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"By the end

Larry Inman, HP

don't see the valu

IBM reiterates PowerPC commitm

IBM is expected to ship its long-awaited PowerPC des systems in June, but with a beta version of OS/2 for Pow Lee Reiswig, general manager of the Personal Softwar Products division, said at an analyst conference in Orla Fla., last week.

HP set to launch PA-8000 chi systems not expected until 199

Hewlett- ckard Co. plans to announce its next

ecision Architecture microproces-

on March 6.

is expected to achieve a rating

SPECint92 and greater than 550

hose performance numbers are

ge as the processor nears produc-

miliar with the product said.

clock speed greater than 200

Sun Microsystems Inc.'s Sparc Technology Business and MIPS Technology Inc. have both announced the architecture of their next genera processors a year before they will appear in an products.

"It's sort of a liar's race," said Andrew Allis editor of Inside the New Computer Industry. "The stakes keep going up."

The RISC chip makers are trying to prove t have processors advanced enough to not only compete against each other but to also compet

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Cint92 for Int

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IBM, Motorola To Announce 64-bit PowerPC

64-bit PowerPC

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Sun announces untested 64-bit chip

Microsystems Inc.'s SparcTechnology

compared to Digital's Alpha AXP 21164, which has a SPECint92 rating of 330.

HP, Sun's biggest rival, is shipping a PA-7150 processor that has a SPECint rating of 135 and next month will introduce the PA-7200, which is expected to have a SPECint92 rating of about 150.

acknowledged the performance gap but

IBM, Motorola show off PowerPC 620 prototype; volume shipment expected in '95

IBM and Motorola are announcing the PowerPC 620 this week, the most advanced implementation of the PowerPC architecture to date.

As part of the announcement, the two companies introduced the first 620 prototype, with sample shipments to follow in the second quarter of 1995.

Volume production

second half

1997 date set for delivery of HP/Intel P7

Intel Corp. acknowledged last week that the P7 will be the first chip to come out of the alliance it formed with

per second (see "Pentium now, VLIW later," Jan. 30, page1).

The basic concept of the VLIW is to have the comp

PowerPC Much hype, little de

PC Week via First!: Hannover, Germany -- IBM, Apple Inc., and Motorola Inc. showed little restraint in hyping the BIT here last week, but in private, officials from the tr eir standard isn't ready for prime time.

range of PowerPC processors in the pipe that on price/performance, lagging system and soft t continues to keep the PowerPC from breaking niche and winning converts in the PC mainstrea going to take two to three years for us to really chall hil Hester, general manager of IBM's Systems and T Division, in Austin, Texas. "I don't have illusions that this i overnight disc

INTEL-HEWLETT-PACKARD ALLIANCE SEEN RALLYING A 64-BIT MICROPROCESSOR STANDARDS EFFORT

There are scant details of how Hewlett-Packard Co. plans to introduce technology developed under its

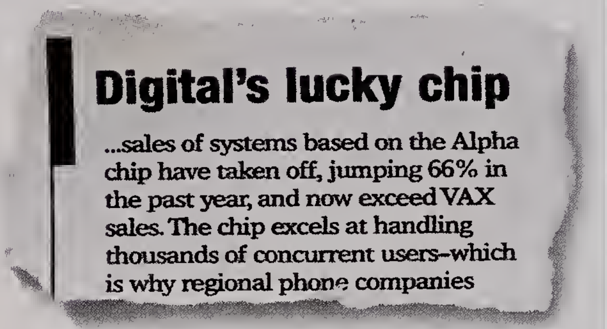
traffic. Anoth

massive 64KB Level cache. Most previous

have had 32KB or

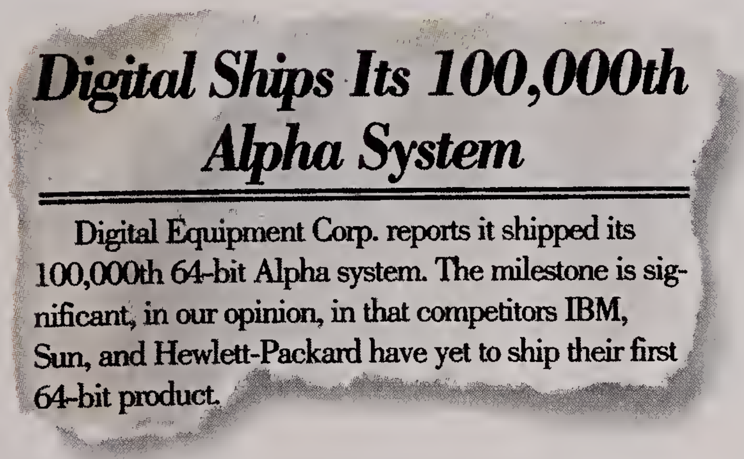
IT'S NICE TO SEE IBM AND HP FIGHTING OVER WHO WILL BE NUMBER 2.

In fact, it's downright heartwarming. Digital, of course, beat both of them to 64-bit computing long ago. And while neither one has a 64-bit machine to sell you, we're now on our second generation of 64-bit Alpha-based workstations and servers. Machines that offer price/performance leadership at every level. For example, our new AlphaStation™ 250 system is half the price of the comparably performing HP workstation.[1] While our new AlphaServer™ 8200 and 8400 systems are the first and only servers capable of running the newest 64-bit database products —letting your application directly address up to 14GB of data in main memory, and giving you performance gains of up to one hundred times over 32-bit enterprise systems. Alpha-based systems run thousands of applications—including the ones you need most. And, thanks to the enormous capacity and scalability of 64-bit architecture, they'll work with your present equipment, and grow almost limitlessly as your business grows. Sure, it's possible that HP or IBM really will have 64-bit machines, eventually. But even when they start offering real-world 64-bit products, it'll still be years before they'll have been as thoroughly tested and evolved as ours are right now. So why wait? Whatever your business, whatever your budget, you can do what thousands of companies all over the world have done—and what IBM and HP have been unable to do—have a 64-bit computer you can call your own. For more information, contact your Digital business partner. Or call 1-800-DIGITAL. Or reach us via our Internet address: moreinfo@digital.com.



Digital's lucky chip

...sales of systems based on the Alpha chip have taken off, jumping 66% in the past year, and now exceed VAX sales. The chip excels at handling thousands of concurrent users–which is why regional phone companies



Digital Ships Its 100,000th Alpha System

Digital Equipment Corp. reports it shipped its 100,000th 64-bit Alpha system. The milestone is significant, in our opinion, in that competitors IBM, Sun, and Hewlett-Packard have yet to ship their first 64-bit product.

digital™

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[1] As of 6/6/95.

AAL

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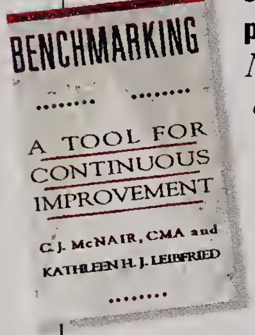
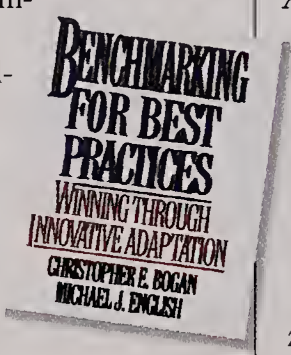
RECOMMENDED READING

BEST PRACTICES BOOKSHELF

If you read this issue cover to cover and still want to know more about best practices, take note. In researching best practices and the five CIO-100 categories, we found the following worthy of a place on your bookshelf:

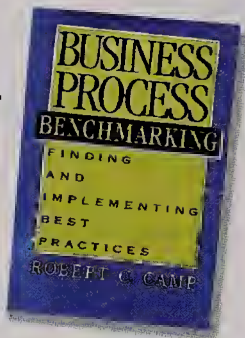

BENCHMARKING
A TOOL FOR CONTINUOUS IMPROVEMENT
C.J. McNAIR, CMA and KATHLEEN H.J. LEIBFRIED

Benchmarking: A Tool for Continuous Improvement *by C.J. McNair, CMA, and Kathleen H.J. Leibfried. Oliver Wight Publications Inc., Essex Junction, Vt., 1992.* This Coopers & Lybrand series publication includes a case study on internal practice benchmarking at Avon.

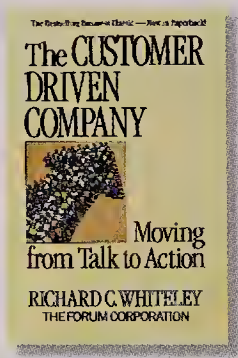

BENCHMARKING FOR BEST PRACTICES
WINNING THROUGH INNOVATIVE ADAPTATION
CHRISTOPHER E. BOGAN
MICHAEL J. ENGLISH

Benchmarking for Best Practices: Winning Through Innovative Adaptation *by Christopher Bogan and Michael J. English. McGraw-Hill Inc., New York, 1994.* A senior Baldrige examiner and a TQM specialist provide insights into identifying and leveraging both external and internal best practices.

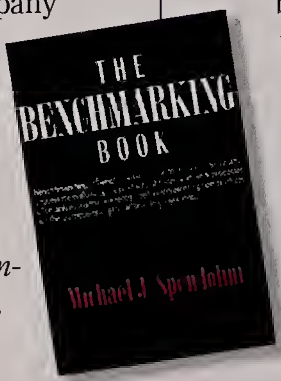
Logistics in Service Industries *by Peter A. Smith, Jack Barry, Joseph L. Cavinato, et al. Council of Logistics Management, Oak Brook, Ill., 1991.* Reviews the best supply chain (transportation, warehousing and inventory, purchasing and customer service) practices in hospitals, telephone companies, retail banking and high-tech field service organizations.


BUSINESS PROCESS BENCHMARKING
FINDING AND IMPLEMENTING BEST PRACTICES
ROBERT C. CAMP

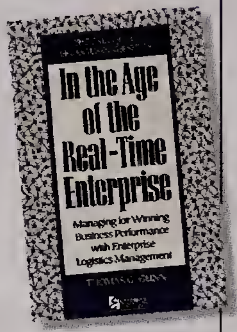
Business Process Benchmarking: Finding and Implementing Best Practices *by Robert C. Camp. ASQC Quality Press, Milwaukee, 1995.* One of the original fathers of benchmarking, Camp was a quality and benchmarking guru at Xerox for decades before joining a consulting firm this year. His latest work includes case studies on supply chain management, employee recognition programs and customer satisfaction.



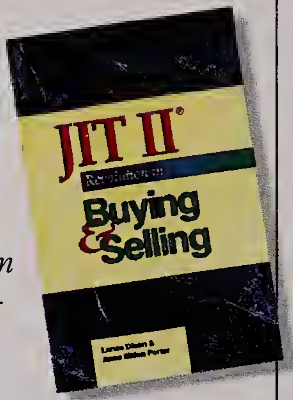
The Customer-Driven Company: Moving from Talk to Action *by Richard C. Whiteley. Addison-Wesley Publishing Co., Reading, Mass., 1991.* A classic tome on how to move beyond product or service quality movements and embed the seven imperatives of a customer-driven company into your organizational culture.



The Benchmarking Book *by Michael Spendolini. AMACOM/American Management Association, New York, 1992.* A good primer on the process and its variations.

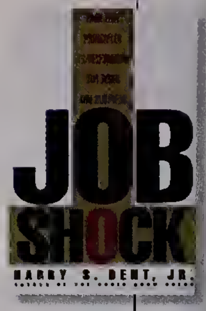

In the Age of the Real-Time Enterprise
Managing for Winning Business Performance with Enterprise Logistics Management

In the Age of the Real-Time Enterprise: Managing for Winning Business Performance with Enterprise Logistics Management *by Thomas G. Gunn. Oliver Wight Publications Inc., Essex Junction, Vt., 1994.* A primer on enterprise logistics management for senior management and materials-management executives in manufacturing.

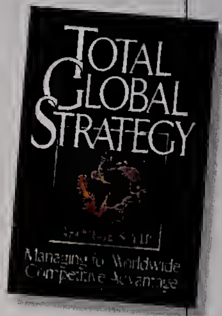


JIT II: Revolution in Buying & Selling *by Lance Dixon and Anne Millen Porter. Purchasing Magazine, Cahners Publishing Co., Newton, Mass., 1994.* A detailed case study of how Bose Corp. has taken just-in-time tactics a step further by inviting suppliers to operate on-site. Includes Harvard Business School case study.

Reengineering the Supply Chain: Strengthening Manufacturing's Weak Links *by R. Michael Donovan. R. Michael Donovan & Co. Inc., Natick, Mass.* A forthcoming book by one of the manufacturing industry's foremost supply chain reengineering consultants. Includes lots of checklists and self-help tests to help readers gauge their companies' progress.



Job Shock *by Harry S. Dent Jr. St. Martin's Press, New York, 1995.* A book that delves deeply into four current principles that are transforming work and business. Better yet, the book maintains an optimistic view for the long haul, despite the layoffs, downsizings, consolidations, etc.



Total Global Strategy: Managing for Worldwide Competitive Advantage *by George S. Yip. Prentice Hall Inc., Englewood Cliffs, N.J., 1992.* A comprehensive, thoroughly researched and practical guide to globalization, including a step-by-step worksheet on how to conduct a global strategy analysis. ■

HIGH IT FINANCE

A benchmarking study of the finance function conducted by KPMG Peat Marwick LLP found that better-performing companies in transaction-processing activities spent 50 percent more than average on information systems.

CIO
PERSPECTIVES

Conference
Supplement to
CIO Magazine

FEATURING

PETER SENGE

The Challenge for Fundamental Change

■■■

Myers-Briggs Personality Types

PLUS:

The People Systems Advantage

Think Global, Implement Local

Assumptions for the Digital Economy

The Sociopathology of the Internet

THE PSYCHOLOGY OF IT: THE CIO'S NEW MIND SET

OCTOBER 15–18, 1995 ■ HYATT GRAND CYPRESS ■ ORLANDO, FLORIDA

CIO

PERSPECTIVES

Conference Supplement

INSIDE

Conference Overview
Joseph L. Levy & Lynda Rosenthal

Staying Ahead of the Class
IT must drive enterprises to openly communicate and become learning organizations.

Agenda
Detailed information about each general, concurrent and professional session and scheduled activities throughout the conference.

Companion Program
Join conference participants for receptions and meals, and enjoy a special companion breakfast, a tone and stretch class on the upper pool deck and an optional excursion.

Hyatt Grand Cypress
Stay at Orlando's loveliest hotel, at the edge of one of America's most challenging Nicklaus-designed golf courses.

Corporate Hosts
During the conference, our Corporate Hosts, a select group of innovative, top-quality companies, will display a wide range of solutions to address IT management issues.

Enrollment Form
Complete and return the enrollment form by **fax** to 508-879-7720; **mail** to 492 Old Connecticut Path, Framingham, MA 01701; or **call** 800-366-0246 to enroll by phone.

Conference Overview

Investigate the psychology of technology and examine personality profiles and how they affect communications.

As the nature of IT has changed so radically over the past five years, so have the requirements for being a successful CIO. Change and growth, both personal and professional, are everywhere and constant and, as we know, resistance to change is continuous.

Each day, CIOs face changes in the competitive and economic landscape in which their businesses operate. With centralized data centers yielding to decentralized client/server shops, CIOs are being forced to become less technical and yet more business savvy.

Just as information systems are needed to share data, so are learning processes required for knowledge sharing to be possible in this radically changing marketplace. This is why "rarely does sharing information change mental models and lead to fundamental improvement in business operations," says Peter Senge, author of *The Fifth Discipline* and co-author of the recently released *The Fifth Discipline Fieldbook*. CIOs need to learn how to share actionable information that can lead to increased success in business.

The Psychology of IT will bring together visionaries, leading IT practitioners and analysts, CEOs, our Corporate Hosts and the staff of *CIO* Magazine. For three and a half days, we'll explore why an ongoing learning cycle is critical to creating long-lasting change and what it takes to create an environment where true learning can occur and where new information has the chance of leading to increased knowledge and wisdom. We'll also investigate the psychology of technology and examine personality profiles and how they affect communications.

So, mark your calendar and join us October 15–18 in Orlando. Be sure to make your hotel and flight reservations as soon as possible; the hotel will sell out. Bring a colleague! Call your enrollment in to 800-366-0246, or fax it to 508-879-7720.

Regards,

Joseph L. Levy
Joseph L. Levy
President & Publisher
CIO Communications, Inc.

Lynda Rosenthal
Lynda Rosenthal
Senior Vice President & General Manager
Executive Programs

Staying Ahead of the Class

BY CAROL HILDEBRAND

From reengineering business processes to competing in a global economy, companies are realizing that not only is business as usual not good enough, it's downright dangerous. Companies can no longer get by with employees who simply learn their jobs and perform them. Now a smart company stays smart by creating a "learning organization," a company full of inquisitive, lifelong learners who are comfortable with fluidity.

However, such a mandate means more than collaborative research material residing on a network. "Sharing information is not enough," says Peter Senge, director of the Center for Organizational Learning at Massachusetts Institute of Technology's Sloan School of Management, author of *The Fifth Discipline,* and co-author of *The Fifth Discipline Fieldbook*. "You need to develop a learning process, and that's fundamentally different from just sharing information." Listening to somebody tell you how to ride a bicycle, for example, is sharing information, but you still won't be able to pedal off into the sunset. To do that, you need to learn and experience the process for yourself.

Companies need to build these learning processes into their cultures, Senge says. To do so, they must examine and change mental models — internal images of how the world works and images that limit us to familiar thoughts and acts — toward learning.

For IT executives, this presents a special set of challenges. Their mind sets are geared toward building and maintaining information systems, but, Senge says, "IS should disabuse itself of the silly notion that IT will produce learning." In *The Fifth Discipline*, Senge writes that learning is "act[ing], learn[ing] the consequences of our actions and then adjust[ing]." To the extent that some systems can be built to help us gain experience through training, "systems can help to a limited degree," he says. Most work done with learning, however, involves the far more difficult prospect of examining how personal attitudes can interact with different relationships to affect corporate learning and team building.

Any team will bring together a disparate set of these attitudes; experts agree that as companies rely more on collaborative efforts by cross-functional teams, employees will have to develop more "emotional literacy" to understand group dynamics. It's no surprise that many companies are using such tools as the Myers-Briggs Type Indicator to help workers identify the different values and motivations that lie behind colleagues' actions. There are 16 Myers-Briggs personality types, which are derived from eight personality preferences, such as thinking vs. feeling. None is better than another, but there are big differences. For example, IT types are historically skewed toward "thinking" rather than "feeling," which directly opposes the personality types of much of the user community. It's no wonder that IS/user relationships often suffer an unfortunate disconnect ➢

in communication. Tools like Myers-Briggs can help information technology executives understand users' motivations and build strong relationships with the user community.

IS staffers can also use some help with the softer skills when it comes to determining user requirements of new systems. "IT usually asks managers, 'What do you need?' " says James C. Wetherbe, director of the MIS Research Center at the University of Minnesota. "This would be as useful as a psychotherapist asking a patient what type of psychotherapy he or she needs. In neither case can the client accurately respond." Wetherbe says that successful application developers do less asking and more listening and observing.

When it comes to successful communication, group dynamics are not the only issue. The very technological tools used to communicate also have a psychological impact, according to Will Pape, CIO of VeriFone Inc., nominally based in Redwood City, Calif. VeriFone, which makes hardware for and manages networks and software for credit-card authorization, is one of the pioneers of "virtual work." With employees constantly dispersed, using the right method of communication is important when it comes to articulating and executing business imperatives, Pape says.

He has identified what he calls the "psychological impact" of more than 30 tools. For example, snail mail sits at the low end of his scale; it's "psychologically remote," he says. "However, people don't benefit from non-verbal cues, such as body language, that typify the high end of the scale — the high end being face-to-face communication."

Everyone needs to experience the learning process first-hand.

VeriFone workers can use the ratings to choose a more effective method of communication in a touchy situation or when they do not know a co-worker well enough to rely on a past history of shared experiences as a guide to current events. Most companies rely too much on such relatively low-level tools as the telephone and e-mail. Installing such tools as videoconferencing or adding an audioconferencing option to a geographically scattered work team can provide a much richer level of information, Pape says.

Enhancing communication between internal groups in a company is difficult enough. Establishing a customer/vendor dialogue is even tougher, but many companies focusing on raising their levels of customer satisfaction say it is nearly as important.

Changes in market segments and distribution channels "force CIOs to rethink what kinds of information and support are required" for line managers to succeed at that old adage, "Put the customer first," says Barton Goldenberg, president of ISM Inc., a Washington, D.C.-based consultancy. As organizations strive to look outward, to the customer, Goldenberg says that CIOs need to focus on the outside world as well, particularly the shifting business conditions affecting their companies and the emerging tools that take advantage of fluid conditions.

Whether it is perfecting internal relationships or choosing the right tools to help win customer loyalty, today's CIOs face the challenge of changing their business mind sets. It used to be that the only sure things in this world were death and taxes. But today's corporate executives should add one more thing to the list: Constant change is here to stay — in business processes, in IT and, most of all, in business relationships.■

Disciplinary Actions

Peter Senge's The Fifth Discipline *espouses what he calls "five new component technologies [that] are gradually converging to innovate learning organizations. Though developed separately, each will, I believe, prove critical to the others' success."*

SYSTEMS THINKING

Businesses are systems-bound by invisible factors of interrelated actions. As humans, we are part of the whole web, which makes it difficult to see the forest for the trees. Systems thinking helps us see the full picture more clearly.

PERSONAL MASTERY

This is the discipline of continual commitment to focusing our energies on deepening our personal vision — a personal commitment to lifelong learning, Senge says.

MENTAL MODELS

These are deeply ingrained personal assumptions about one's world based on past history and internal lessons learned that influence our view of the world and how we act on it.

BUILDING SHARED VISION

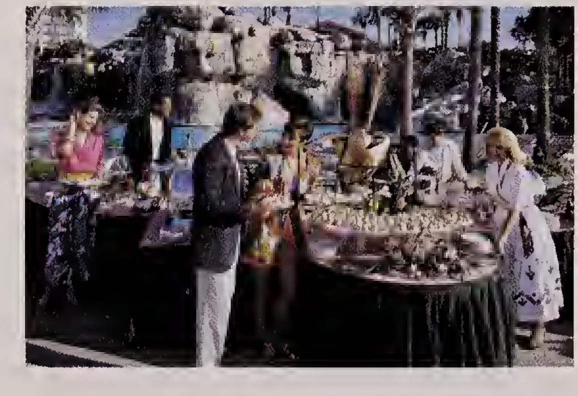
Any organization with any pretensions to greatness is able to inspire its workforce into creativity through a shared picture of what the future should look like.

TEAM LEARNING

When a team is truly learning together, the collective insights are stronger than anything put forth by its individual members. Teams need to examine patterns of defensiveness that can cloud clear-flowing interaction among members.

Orlando's Hyatt Grand Cypress

The spectacular beauty of the Hyatt Grand Cypress features lush tropical gardens, exotic birds and tropical plants combined with the 45-hole Jack Nicklaus signature golf course, a large white sand beach on a 21-acre lake, professional tennis facilities and a complete health club. The Hyatt is adjacent to Walt Disney World, 20 minutes from downtown Orlando and Orlando International Airport, and is convenient to The Magic Kingdom and EPCOT Center at Walt Disney World, Disney-MGM Studios Theme Park, Cypress Gardens, Kennedy Space Center, Busch Gardens and Splendid China.



TO ENROLL CALL 800-366-0246

CIO
PERSPECTIVES

Sunday, October 15

3:00pm–6:00pm
Conference Registration

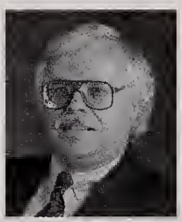
7:00pm–9:30pm
Welcome Reception

9:30pm–12:00am
Hospitality/Networking

Monday, October 16

7:30am–8:15am
Breakfast

8:15am–8:20am
Welcome & Opening Remarks



Joseph L. Levy
President & Publisher
CIO Communications, Inc.

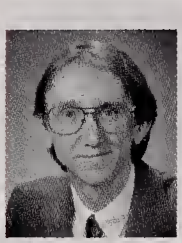
8:20am–9:30am
A Psychotherapeutic Approach to Getting Information Requirements Right

Conference Moderator
Dr. Jim Wetherbe
Director
MIS Research Center
University of Minnesota

Federal Express Professor of Excellence & Director
Center for Cycle Time Research
University of Memphis

Most systems designers determine information requirements by asking managers, "What do you need?" This is as useful as a psychotherapist asking a patient what type of psychotherapy he or she needs. In neither case can the client accurately respond. Failure to get information requirements correct results in a major loss of productivity in systems development. In this presentation, the four most common mistakes that can occur when determining information requirements will be discussed, along with their solutions.

9:30am–10:15am
Understanding Personality Differences Among Executives: Using Myers-Briggs to Build Relationships

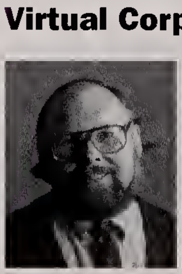


Gerald P. Macdaid
CEO
Center for Applications of Psychological Type

Constructive use of personality differences can be a potent tool for improving human relationships in technical environments. The Myers-Briggs Type Indicator is a popular tool for assessing such differences and is useful for team building, quality management and effective problem solving. Macdaid will include an overview of type concepts; discuss data on personality differences between the IT function, other functional areas in the company and relevant customer groups; and discuss how these differences affect IT professionals and their constituents.

10:15am–10:45am
Coffee Break

10:45am–11:30am
The Psychological Impact of Communication Tools for the Virtual Corporation



William R. Pape
CIO
VeriFone, Inc.

As companies work to globally decentralize, they must pay special attention to the internal communication tools that make an organization seem as if everyone is working from one location. Many people think that the only communication tool needed in a global virtual corporation is electronic mail, but this is not true. VeriFone has been operating as a virtual corporation since the early 1980s and has developed a list of 32 specific communication tools appropriate to the virtual corporation. This session will present the tool kit and discuss the strengths and weaknesses of each tool.

11:30am–12:15pm
Rethinking the Business at Allstate: An Evolutionary Process

Frank Pollard
Senior Vice President & CIO
Information Technology
Allstate Insurance Company

The insights, attitudes and objectives leading to the decision to restructure one of the world's largest insurance companies revolve around intra-company and client relationships, improving the overall value and efficiency of IS as a business enabler, and the IS organization itself. The strategies, processes and solutions used to transform the company will be discussed, highlighting the elimination of redundant and legacy systems, building a data warehouse and the value of selectively outsourcing and partnering.

12:15pm–1:30pm
Luncheon

1:30pm–6:30pm
Professional Sessions, Networking & Recreation

1:30pm
Golf Tournament
The New Course

1:30pm
Tennis Tournament

PROFESSIONAL SESSIONS

1:30pm–3:00pm
Service Up, Costs Down? A Practical Approach

Jan Stambaugh
Manager
Computing & Technology Services
Hewlett-Packard Company

Like most other corporations, Hewlett-Packard has been pressed to reduce the cost structure of its IT organization. Yet end users are demanding higher service levels than ever before. In this session, you will hear how HP tackled both objectives at once.

1:45pm–3:45pm
Surviving the Earthquakes in IT Leadership

Charlotte Roberts
Co-Author
The Fifth Discipline Fieldbook
Partner
The Learning Circle
Courtesy of EDS

The new name for "IT" is Organizational Change Technology (OCT), with the goal of developing organizational perceptiveness, collective intelligence and delivery agility. In this session, two OCT imperatives for building competitive advantage will be explored: the continuous refinement of mental models and the development of scenario thinking.

6:30pm–7:30pm
Reception

7:30pm–9:00pm
Dinner

9:00pm–12:00am
Hospitality/Networking

Tuesday, October 17

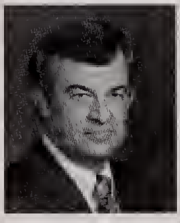
7:15am–8:00am
Breakfast

8:00am–8:45am
New Business and Technology Assumptions for the Digital Economy

Don Tapscott 📖
Chairman
Alliance for Converging Technologies

A new medium is impacting our economic and social lives with new dynamics, rules and drivers for success. The internetworked business is emerging — as different from the old corporation as it is from the feudal craft shop. What's so new about the new economy? How can the new infrastructure enable wealth creation and societal development? How can companies manage a transition to the new technology and the digital creation, marketing and distribution of goods and services?

8:45am–9:30am
The Last Frontier for Competitive Advantage: Optimizing the Involvement of People in the Business



R. Timothy Epps
Vice President of People Systems
Saturn Corporation

The last frontier for competitive advantage is optimizing the involvement of people in the business. Rethinking traditional organizational and compensation systems has yielded non-traditional management practices, including teamwork, empowerment and worker participation in business decisions. This has been accompanied by a shift toward pay systems that include significant business-performance alignments for employees at all levels. Learn how Saturn is providing the structures and systems that support people in the new competitive environment.

9:30am–10:15am
Think Global, Implement Local: An IT Challenge

Patrick J. Zilvitis
Vice President
Corporate Information Technology
The Gillette Company

Gillette, a growth-driven consumer-products company, is currently changing its thought processes by reengineering the supply chain and other critical business processes, consolidating activities, aligning business and IT goals, and forming cross-functional teams driven by the business. Gillette is also moving rapidly from a proprietary data-center environment to an open, distributed client/server approach to deliver information to the desktop client. This session will paint a business-driven vision for IT in the year 2000 at The Gillette Co.

10:15am–10:45am
Coffee Break

10:45am–11:30am
Concurrent Sessions

11:45am–12:30pm
Concurrent Sessions: Repeated

12:30pm–1:30pm
Luncheon

1:30pm–2:15pm
Concurrent Sessions

2:30pm–3:15pm
Concurrent Sessions: Repeated

3:15pm–3:30pm
Coffee Break

📖 *When this symbol appears, each attendee will receive a copy of the presenters' newest book.*

TO ENROLL CALL 800-366-0246

3:30pm–5:30pm

From Information Systems to Learning Processes: The Challenge for Fundamental Change

Peter Senge
Director, Center for Organizational Learning
Sloan School of Management
Massachusetts Institute of Technology

Just as information systems are needed to share data, so are learning processes required for knowledge sharing. Drawing on his work with member organizations of MIT's Organizational Learning Center, Senge will describe how new infrastructures that support an ongoing learning cycle are critical to creating long-lasting change. Senge will talk about creating an environment where true learning can occur, where people are able to challenge their traditional ways of seeing and acting in the world, and where new information has the chance of leading to increased knowledge and wisdom.

5:30pm–6:30pm

Reception with Peter Senge

6:30pm–12:00am

Hospitality/Networking

Wednesday, October 18

7:15am–8:00am

Breakfast

8:00am–8:45am

When New Business Strategies Equal New IT Opportunities

Barton Goldenberg
President
ISM, Inc.

Key emerging business, marketing and sales strategies, such as market segmentation, distribution-channel strategies and the growing use of product-development teams, can make the CIO a true business partner. New information technologies — mobile computing, micro-marketing techniques and the information superhighway — are affecting the successful formulation and implementation of these new strategies. Only the CIO can deliver the technology to support these new avenues.

8:45am–9:30am

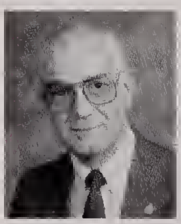
Transforming IT in a Global Company

Michael D. Radcliff
Vice President & CIO
Owens-Corning Fiberglass Corporation

Owens-Corning, a $3 billion company with 17,000 employees in more than 30 countries, has embarked upon an aggressive strategy to implement a global IT architecture to improve enterprise information availability, enhance business processes and increase productivity. Ultimately, Owens-Corning adopted a selective outsourcing strategy to divert resources from legacy technologies and to fund new ones. Radcliff will discuss how Owens-Corning is addressing a number of cross-functional, psychological and inter-organizational issues.

9:30am–10:15am

The Sociopathology of Internet Commerce



Einar Stefferud
Chief Visionary
First Virtual Holdings Inc.

Having a network can be more of an affliction than a blessing. Without a network, localities can operate without dependence on other localities. With a network and the rapid exchange of information among localities, dependence levels and interference levels increase. Local processes must mesh with and interwork with those other localities. This reaches its extreme on the Internet, a collection of more than 58,000 networks. Stefferud will explore how the Internet can function in our newly open telecommunications market, who sets the ethical standards for doing business on the Internet and if this behavior is socially pathological.

10:15am–10:30am

Coffee Break

10:30am–12:00pm

One Customer at a Time: The Future of Marketing

Don Peppers
President
Marketing 1:1

IT is changing the very dimension of business competition — from traditional, product-centered competition to customer-oriented, one-to-one marketing. Peppers will dramatically weave together the various capabilities that IT has given businesses, from tracking millions of customers individually to communicating with them interactively, as well as customizing processes to individual specifications. These capabilities have resulted in a vision of the future that is compelling for any CIO trying to come to grips with the new psychology of IT.

12:00pm–12:15pm

Summary

CONCURRENT SESSIONS

Each Corporate Host will provide a concurrent session, which will be offered twice. You will be able to attend a maximum of four sessions.

Case-in-Point Live! Success Stories for Data-Preneurs on Putting the New Mind Set Into Action

Donald P. Hinman, PhD
Business Development Executive
Acxiom Corporation

Stimulate your thinking by interacting with practitioners of the new IT mind set — innovators who have transformed data resources into winning business solutions. This session will explore the learning and change processes they have gone through to meet and surpass their IT goals. This session, drawn from Acxiom's new reference center, Case-in-Point, will help you meet the challenges of understanding and leading data-based innovations for your organization.

Distributing Data Across the Enterprise: A Decision Process Overview

Stuart Cerullo
Director
Application Development
ITT Sheraton Reservation Corporation
Courtesy of Amdahl Corporation

This session will explore whether distributed systems are the optimal solution for providing enterprise-wide access to information. It will discuss ITT Sheraton's Central Reservation System project, focusing on cost/benefit evaluation, tools available for reengineering mission-critical, mainframe-based, enterprise-wide, client/server environments and retraining and benefits of RAD/JAD best practices.

Customer-Driven Transformation: Designing Integrated Global Solutions

Ron Fowinkle
Vice President & CIO
AT&T Global Information Solutions

Today's CIO has two singular preoccupations — customers and systems. To better serve customers, CIOs must reorient MIS to the competitive environment of maturing industries, global competition and highly segmented markets. For AT&T GIS, achieving this transformation meant global analysis of external customer requirements, joint application efforts, innovative collaboration with third-party software providers and a unique knowledge center application for dispersed information sharing.

Managing Production Quality Client/Server Networks

Jim Goetz
Director
Network Management
Bay Networks, Inc.

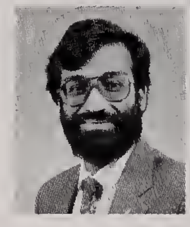
This discussion looks at the economics involved in managing a production-quality client/server network and the key IT challenges facing CIOs trying to build and run highly effective network-support organizations. Goetz will explore the key technologies and design issues that must be considered early in an organization's life cycle in order to ensure a manageable network infrastructure. He will provide clear guidelines for planning and funding projects.

Switching: The Road to Virtual internetworks

Gordon C. Saussy
Vice President
Product Marketing
Chipcom Corporation

Enterprise Local Area Networks (LANs) are expanding to incorporate more and more high-speed switching technology. LAN switching is a well-known solution for LAN congestion and overload, and has been utilized extensively in large networks to microsegment existing LANs and provide high-speed server interfaces. This session will discuss the "Virtual Internetwork" and describe how new ATM and Layer 3 Switching technologies will redefine enterprise internetworks.

Client/Server Computing: Who's Getting it Right?



Yogesh Gupta
Senior Vice President
Systems Management
Product Strategy
Computer Associates International, Inc.

This session will present case studies and the latest research focusing on the migration to client/server, and offer the practical steps to get there. This knowledge has been incorporated, along with CA's years of expertise in business computing, into a pragmatic methodology that allows you to build and manage a client/server environment specifically suited to your organizational environment.

Concurrent Sessions continued ➢

A Survival Guide to Managing Continuous Change

Jose Leruth
Director
Strategic Alliances
Data General Corporation

In the past, taking advantage of technology transitions meant replacing not only the hardware but systems software, systems management tools and applications. Although hardware costs have dropped dramatically, the costs of software and retraining have not. How can CIOs sort through the plethora of computing options and implement new technologies with minimum disruption and cost to the enterprise? This session will provide strategies for surviving in this changing world.

Walking the IT Tightrope: Balancing Life Cycle Costs, Business Needs & Evolving Technologies

Thomas L. Thomas
CIO
Dell Computer Corporation

As information technology evolves, the costs associated with operations, administration and support can skyrocket if not effectively managed. Organizations that have adopted a life-cycle cost philosophy are better equipped to meet their global business needs while leveraging the most applicable technologies. Thomas will discuss the challenges of walking the IT tightrope and will share examples of how Dell and other major corporations have successfully utilized a life-cycle cost philosophy.

Reengineering the CIO Mind Set

Phil Andrews
Manager
Strategic Business Initiatives
EDS

CIOs are encountering challenges and forces that are dramatically reshaping their profession, from megatrends in the business and technical environments to interesting perceptions regarding the CIO's role. CIOs need to understand their fellow executives' business perspectives and mental models. This involves modifying one's behavior as an executive and adapting a proactive approach of the role of information/knowledge and its strategic uses within the enterprise and the outside world. This session will discuss the key aspects of mind set reengineering and its impact on CIOs.

Knowledge Management at CompUSA: A Real-World Application

Arlene Honbo
Partner & Area Director
Ernst & Young LLP

James Infinger
Vice President & CIO
CompUSA, Inc.

For too long, CIOs have focused on the tactics associated with the complex task of successfully deploying IT within organizations, while failing to focus any substantive attention to the issues around information itself. To be successful chief *information* officers, CIOs need to define what information actually is, how it is used and how it brings value. Realizing that knowledge is one of its greatest assets, CompUSA has addressed the issue of knowledge management head on. This presentation will focus on knowledge management at CompUSA — a real-world situation.

Touching the Customer: Leveraging Decentralized Computing to Achieve a Customer Service Edge

Craig B. Lashmet
Partner, Advanced Technology & Client/Server Practice
Grant Thornton LLP
Courtesy of Gupta Corporation

Getting closer to the customer is essential to survival. Leveraging decentralized application systems can help you reach out to your customers (and users) and achieve faster customer responsiveness and higher satisfaction. But how do you effectively synchronize information between centralized mainframe, regionalized servers and remote users? Lashmet will present a case study of a highly successful customer-service and loan-origination system that provides a competitive edge by reducing operating costs while increasing user productivity and customer satisfaction.

Creating a Shared Vision: The New Leadership Role of the CIO

Glenn Osaka
Worldwide General Manager, Professional Services Organization
Hewlett-Packard Company

To be successful in the new information technology era, the IT professional must provide strong leadership to create a shared vision of IT with the business management team. He or she must also assess the readiness and commitment of the organization's senior management, IT management and workforce to support and endure the change needed to deliver on this vision. Osaka will highlight the opportunities and pitfalls that IT managers face in meeting this challenge and will share practical approaches for winning in this new environment.

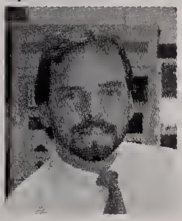
Concurrent Sessions continued ➢

The IT Puzzle: Making the Pieces Fit

Dave Morehead
Director of Research
Hyperion Software

Part of the CIO's new mind set involves dealing with the rapidly changing nature of both technology and technology providers. A single-vendor implementation is no longer viable for most enterprise client/server hardware or software projects, yet a multivendor solution may require constant IT management and oversight. How do you make the various pieces fit? In this session, learn how best-of-class applications and multivendor technology are successfully integrated to provide a seamless solution to mission-critical business issues.

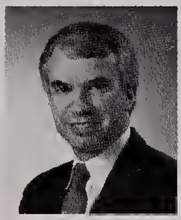
The Olympic Games as an IS Consumer



Mark P. Ryan
Project Manager
Chief Architect
Large Systems Design and Integration
1996 Atlanta Centennial Olympic Games
Courtesy of IBM Corporation

The largest televised event in this century, which will be seen by approximately four billion people, requires a significant computing infrastructure. The large systems design for the '96 Olympic Games production applications includes client/server hardware, operating system software, transaction processing, database-to-database transfer and end-user application performance, reliability and availability. This presentation will explain how the process started, what the Olympic application requirements are and how they are being addressed through an architected client/server design.

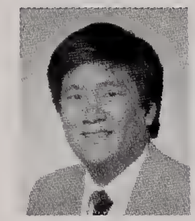
Info-Surfing on a Parallel Sea: The New World of Relational Systems



Geoffroy T. Roach
Director
Tools Marketing
Informix Software, Inc.

Multiprocessor and clustered hardware architectures allow businesses to process an unprecedented amount of raw data — *and* conduct real-time, ad hoc analysis of that data. The improvements in *quantitative* performance are creating *qualitative* changes — including the information superhighway, linking people, ideas, images and sounds. This will lead to an age of "info-surfing," with knowledge workers throughout the enterprise able to access mission-critical data, create breakthrough applications, and help their companies gain and maintain a competitive edge.

Harnessing Innovation & Capturing Best Practices: The CIO's Guide to Process Management



David Hsieh
Vice President
Worldwide Marketing
LBMS, Inc.

The technology every CIO wants is one that replicates expertise and competence across the staff. If an organization only had more "superhero" developers, it could dramatically improve productivity, delivery quality and consistency. Bringing in contract staff is a short-term solution, and bringing new people on board creates more turmoil. This session describes proven strategies for harnessing innovation, capturing best practices and driving out mistakes across the enterprise through process management.

The "Virtual Expertise" Organization

Joseph R. Cleveland
President
Enterprise Information Systems
Lockheed Martin Corporation

Lockheed Martin is leveraging its IT resources to enable a successful merger of the two corporations. The result is a "virtual expertise" organization which identifies cost efficiencies and helps the corporation attain strategic advantages in the marketplace. Cleveland will discuss the organization's concept and the new paradigms Lockheed has adopted to shift the organizational thinking to assure success.

The New Model of Information Implementation: The Resolution of the CIO's Dilemma

Sheldon J. Laube
Executive Vice President & Chief Technology Officer
Novell, Inc.

Information systems must be the link to suppliers, distributors, value-added partners and, most especially, customers. This session will put forth a pragmatic business and IT implementation model that addresses the future needs of information deployment. Laube will present Novell's Business Implementation Model for the '90s, which lays the foundation for the planning and deployment of information anytime, anyplace.

Concurrent Sessions continued ➢

Communications as an IT Tool

Richard L. Baker, PhD
Chief Scientist
PictureTel Corporation

IT professionals must deliver bottom-line business value and provide the latest competitive-edge solutions, all at an accelerated pace, with right-sized, reorganized resources. This session will examine how videoconferencing, from the conference room to the desktop, can help meet this challenge and will include real examples of how teams can pull together to deliver on time, on budget.

CIOs Need a Shrink

Paul Lawryk
Group Manager
Market & Account Development
North America
Sun Microsystems, Inc.

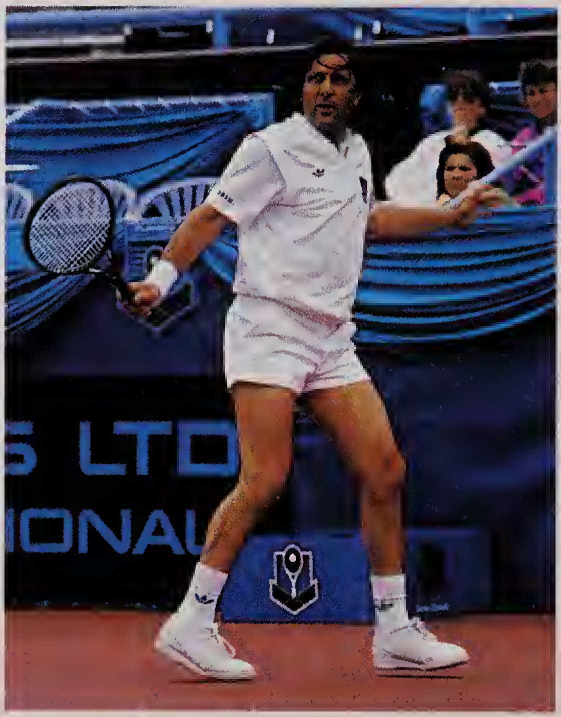
Thornton May
Vice President
Research & Education
Cambridge Technology Partners

This session will provide an overview of the three stages of growth that major corporations experience when implementing and evolving into large-scale client/server applications and how those growth stages have evolved. The session will also discuss how dysfunctional personalities in the workplace pose a very real threat to the CIO's career and his or her ability to manage through these stages of growth.

Structuring IT for Component-Based Development

Jodie N. Ray
CIO
Senior Vice President
TI Software Business
Texas Instruments

The businesses within Texas Instruments, as part of their business-process reengineering efforts, are driving multidimensional changes within the internal MIS organization. TI's journey from business need to concurrent business/IT reengineering have resulted in such changes as the reorganization of IT to support rapid provisioning of solutions, establishment of architectural principles and a vision leading to component-based development.



Ilie Nastase will lead a tennis clinic and round robin, courtesy of Computer Associates International, Inc. on Monday afternoon.

COMPANION PROGRAM

Sunday, October 15

3:00pm–7:00pm
Conference Registration

7:00pm–9:30pm
Welcome Reception & Registration

9:30pm–12:00am
Hospitality/Networking

Monday, October 16

9:00am–10:00am
Tone and Stretch

10:00am–11:00am
Companion Breakfast

12:00pm–1:30pm
Luncheon with conference participants

1:00pm–5:30pm
Optional: Splendid China Tour
(Advance registration & payment required)

6:30pm–9:00pm
Reception/Dinner

9:00pm–12:00am
Hospitality/Networking

Tuesday, October 17

7:15am–8:00am
Breakfast with conference participants

12:30pm–1:30pm
Luncheon with conference participants

3:30pm–5:30pm
From Information Systems to Learning Processes: The Challenge for Fundamental Change
Peter Senge

5:30pm–6:30pm
Reception with Peter Senge

6:30pm–12:00am
Hospitality/Networking

Wednesday, October 18

7:00am–8:00am
Breakfast with conference participants

Corporate Hosts

ACXIOM

Acxiom Corporation builds data warehouses for clients whose business depends on scope, accuracy and accessibility of customer information. Using a unique matrix of services, software and tools that transform data into customer knowledge, multiple internal databases are integrated with external information to drive powerful, knowledge-based decision support applications. With expertise in industries such as retail, banking/finance, insurance and telecommunications, Acxiom helps clients better understand their customers, build effective acquisition and retention programs, reduce response time and improve customer service.

amdahl

Founded in 1970, **Amdahl Corporation** is a leader in developing and integrating large-scale computing systems and enterprise wide solutions that address the business and information needs for leading organizations worldwide. Amdahl's key businesses include large-scale mainframe computers, UNIX system software and servers, data storage subsystems, data communications products, applications development software and a variety of educational and consulting services. Amdahl products are sold in more than 30 countries for use across all types of computing environments.

AT&T
Global Information
Solutions

AT&T Global Information Solutions is a leading supplier of advanced information technology and communication solutions that help AT&T customers better understand and serve their customers by getting, moving and using customer information. Customer Focused Solutions™ are implemented by a worldwide network of service professionals who integrate third party and company products including Globalyst™ personal computers and departmental servers, SMP and MPP enterprise servers, self service and point-of-sale systems and One Vision™ network and systems management tools.

Bay Networks™
The Merged Company of SynOptics and Wellfleet

Bay Networks is a leading worldwide supplier of a full range of highly available multiprotocol routers, intelligent hubs, high-speed switches and sophisticated network management products. The company's comprehensive network-management application, Optivity Enterprise, is a complete, easy-to-use, integrated solution for enterprise wide systems management. Bay Networks was established in October 1994 with the merger of SynOptics and Wellfleet and now has revenues in excess of $1 billion for its most recent year.

CHIPCOM™

Founded in 1983, **Chipcom Corporation** designs, manufactures, markets and services fault-tolerant intelligent switching systems, including hub, internetworking and network-management products for remote-site, campus and enterprise network computing environments. The Southborough, Mass.-based company reported record revenue of $268 million for its 1994 fiscal year, which ended Dec. 31, a 67% increase over 1993 revenues. Together with its resellers, Chipcom has a presence in more than 40 countries, and the company employs over 925 people worldwide.

COMPUTER™
ASSOCIATES
Software superior by design.

Computer Associates International, Inc. is the leading independent software company in the world. CA develops, markets and supports integrated systems-management, information and business-applications software for a broad range of mainframe, midrange and desktop computers. CA serves the international marketplace through direct operations in 29 countries.

Data General
Bringing Common Sense to Computing

Data General Corporation is an open-systems company specializing in commercial servers, storage products and services for information systems users worldwide. Our high-availability AViiON servers, DG/UX operating system and CLARiiON storage products form the foundation for large-scale enterprise computing. This foundation, coupled with software from our strategic partners, delivers a complete business solution. And, Data General's professional and systems-integration services pull it all together, to ensure a smooth installation and implementation.

DELL™

A Global 500 company, **Dell Computer Corporation** designs, develops, manufactures, markets, services and supports a complete line of personal computers compatible with industry standards. Dell is the world's leading direct marketer of personal computers and one of the top five personal computer vendors in the world. With headquarters in Austin, Texas, and 16 international subsidiaries, Dell products and services are now available in more than 120 countries worldwide.

EDS

EDS works with customers ranging from small companies to the largest corporations and governments throughout the world. EDS is in the business of helping them transform market demands into results and business dreams into reality. To achieve this, we offer the insight that allows customers to imagine what's possible through the creative application of information. We then provide the insight to help them realize what's possible. Quite simply, we work side by side with our customers, helping them use information to do extraordinary things.

ERNST & YOUNG LLP

Ernst & Young LLP is the leading integrated professional services firm in the U.S. and among the largest in the world. Our management consulting practice is a leader in business process reengineering, performance improvement and information technology. To increase the speed and quality of our service delivery, we have invested in the Ernst & Young Center for Business Innovation™, which leads the industry in new ways to empower business through people, process and technology. Also, our Center for Business Transformation and Center for Business Knowledge focus on the development of process management tools and a best-practices database, respectively.

GUPTA

Gupta Corporation, a client/server pioneer, continues to innovate with open tools and components for application development and deployment. As corporate information management moves to support business process decentralization, Gupta is leading the market to a new component-based development model. Through more than a decade of steady growth that saw 1994 revenues exceed $64 million, Gupta has raised the ceiling of capability and power with open, integrated tools and database products that let development teams rapidly complete critical application projects.

hp HEWLETT® PACKARD

Hewlett-Packard Company is an international manufacturer of measurement and computation products and systems recognized for excellence in quality and support. The company's products and services are used in industry, business, engineering, science, medicine and education in approximately 110 countries. Hewlett-Packard has 98,600 employees and had revenues of $25 billion in its 1994 fiscal year.

Hyperion
software

Hyperion Software is the software industry's pioneer in client/server financial and accounting solutions for large, multinational corporations. The company's product suite includes a wide spectrum of accounting, management reporting, financial consolidation, budgeting and information access software. Products include *Hyperion Enterprise* for enterprise financial management, *FYPlan* for budgeting and financial planning, and *Hyperion Financials* for corporate accounting. With more than 2,000 corporate customers, Hyperion is ranked third in the client/server accounting market by IDC. The company was formed as IMRS in 1981.

IBM®

IBM Corporation is the world's leading manufacturer of information systems. It is also one of the world's largest software producers. Based in the United States, IBM does business in virtually every country in the world and is among the leading companies in each country. IBM designs, develops, manufactures and distributes information technology solutions that include everything from subnotebook-size personal computers to the largest supercomputers. These hardware solutions are enhanced through the company's comprehensive software, service and maintenance offerings. IBM provides solutions to information-management challenges and gives customers significant competitive advantage.

INFORMIX

Informix Software, Inc. is the leading supplier of high performance, parallel processing database technology for open systems. Informix's database servers are the number one choice of hardware manufacturers for publishing Transaction Processing Council benchmarks for UNIX-based systems. Informix products also include development tools for creating client/server production applications, decision support systems, ad-hoc query interfaces and connectivity software that allows information to be shared transparently from PCs to mainframes within the corporate computing environment.

LBMS

LBMS, Inc. is a leading provider of process management tools for Fortune 1000 organizations. The company's products leverage benefits of workgroup computing and open partnerships to address the complex demands of application development in organizations with heterogeneous computing environments. LBMS' products can be used individually, as components in a mixed-vendor client/server environment, or together in a seamless application development toolset. LBMS tools operate in an open LAN server-based repository system ensuring consistency, integrity and completeness in the application development process.

LOCKHEED MARTIN

The new **Lockheed Martin Corporation**'s Information and Technology Services Sector has emerged as the business and technology solutions partner of choice for customers who demand competitive, value-added innovation. With $4.5 billion in sales and 35,000 employees worldwide, the technology arm of the corporation provides large, sophisticated information processing systems, systems management and complex systems integration for commercial, government and military customers. Key markets include health care, energy and utilities, interactive systems/virtual reality, identification, factory automation and consulting services.

NOVELL®

Novell's business is connecting people with other people and the information they need, enabling them to act on it anytime, anyplace. Novell is the world's leading network-solutions provider. The company's software products provide the distributed infrastructure, network services, advanced network access and network applications required to make networked information and pervasive computing an integral part of everyone's daily life.

PictureTel

PictureTel Corporation, the world leader in videoconferencing technology, is "redefining the way the world meets." The company develops, manufactures and markets a full range of visual communications solutions from the desktop to the auditorium, supported by offices in over 100 cities in 50 countries. To provide products and solutions that are in step with the strategic technologies of the '90s, PictureTel is working with the leaders in computing, telecommunications, software and the most respected organizations in a variety of vertical markets.

Sun

Sun Microsystems, Inc., founded in 1982, is a Fortune 120 company and a pioneer in the general-purpose workstation market, having launched the now popular concept of open systems. Sun's client-server computing solutions include networked UNIX workstations and multiprocessing servers. According to analysts, Sun ships more UNIX systems worldwide than anyone.*

**Source: International Data Corporation*

TEXAS INSTRUMENTS

Texas Instruments, Inc. provides a broad range of business and information technology products and services that allow companies to quickly respond to market dynamics. TI's application-development software product, Composer by IEF™, uses model-driven development to rapidly design, build, test, install and maintain client/server and terminal-based business applications for a wide variety of platforms and databases. Composer is the newest generation of TI's industry-leading IEF for Client/Server. The world's largest companies generate applications with Composer to add competitive advantage and enable change within their information systems.

ENROLLMENT FORM

CIO
PERSPECTIVES

The Psychology of IT: The CIO's New Mind Set

Sunday, October 15 to Wednesday, October 18, 1995
Hyatt Grand Cypress ■ Orlando, Florida

Please print and complete this form in its entirety, then forward to the attention of Executive Programs. **Fax** *to 508-879-7720.* **Call** *us at 800-366-0246.* **Mail** *to: CIO Communications Inc., 492 Old Connecticut Path, Framingham, MA 01701.*

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WHAT IS YOUR INDUSTRY? ____________________

YOUR NAME AS YOU WANT IT TO APPEAR ON YOUR BADGE ____________________

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NAME OF COMPANION (IF PARTICIPATING IN COMPANION PROGRAM) ____________________

Please copy enrollment form for additional registrations.

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ENROLLMENT FEE

○ **IS Practitioners/Executives**
If you are a CIO, IS executive or hold another executive position, the fee is **$1,395**.

○ **Government/Military**
The fee, which includes your hotel for three nights, is **$1,695**. Do not make your own hotel reservations. **CIO** will make them for you.

○ **Sales/Marketing/Consulting**
If you hold a sales, marketing or consulting position, the enrollment fee is **$5,000**. **CIO** will make the final determination of this category.

OTHER ACTIVITIES

Monday afternoon activities include:

- ○ Golf Tournament: **$125**
  Golf must be prepaid
  Golf handicap ____________
  ○ *Club rental*
  ___ *Left-handed* ___ *Right-handed*
- ○ Tennis Tournament: *Complimentary*
- ○ Splendid China Tour: **$37**

○ **COMPANION PROGRAM ($199)**
Companions must be enrolled in this program to attend any conference-related functions. Includes all scheduled meals, entertainment, morning stretch and companion get-acquainted breakfast. Conference session attendance not included.

- ○ Tennis Tournament: *Complimentary*
- ○ Splendid China Tour: **$37**

PAYMENT INFORMATION *(Please make checks payable to CIO Communications Inc.)*

○ Check enclosed ○ Bill company ○ P.O. # ____________________

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CIO *reserves the right to decline enrollment to any registrant.*

TIA

To hasten the enrollment process, attach business card here.

ATTIRE
Casual! Please, no suits, ties or business attire!

HOTEL ACCOMMODATIONS
A block of rooms has been reserved at the Hyatt Grand Cypress. We urge you to make your reservations early by calling the hotel at 800-233-1234. Be sure to identify yourself as part of the **CIO** *conference to receive the conference rate. Please make your reservations early. All unreserved rooms will be released on 9/20/95. Hotel reservations/cancellations and charges are your responsibility.* **CIO** *will make hotel reservations for government/military participants.*

TRANSPORTATION
American Airlines is the official conference carrier. Call American at 800-433-1790 and reference Star File #S3905D5. AVIS is the official car rental provider. Call AVIS at 800-331-1600 and reference B766657. Shuttle bus transportation is available from Orlando International Airport at the rate of $23 round trip with coupon.

ENROLLMENT FEES
All enrollment fees must be paid in advance of the meeting. *Fee includes conference sessions, concurrent sessions, corporate host displays, conference materials and scheduled meals. Transportation, hotel and recreation are your responsibility.*

CANCELLATION
You may cancel your enrollment up to 10/9/95 without penalty. ***NO REFUND OR CREDIT WILL BE GIVEN FOR CANCELLATIONS RECEIVED AFTER 10/9/95.*** *You may send a substitute in your place.*

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TEXAS INSTRUMENTS

THE PSYCHOLOGY OF IT:
THE CIO'S NEW MIND SET

OCTOBER 15-18, 1995

HYATT GRAND CYPRESS - ORLANDO, FLORIDA

Tim Epps
Saturn

Will Pape
VeriFone

Don Peppers
Marketing 1:1

Frank Pollard
Allstate Insurance

Mike Radcliff
Owens-Corning

Peter Senge
MIT Learning Center

Einar Stefferud
First Virtual Holdings

Don Tapscott
Alliance for Converging Technologies

Jim Wetherbe
University of Minnesota

Pat Zilvitis
Gillette

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(for enrollment information)

ALL FOR THE BEST

Overview

Business practices, when refined to peaks of performance formerly unimaginable, become like artists' masterpieces: things to be admired, envied and even marveled at by the general public.

But they probably won't provide sustained competitive advantage, according to competition guru and Harvard Business School Professor Michael Porter. Reengineering, total quality management and best practice benchmarking can get you to the pinnacle, but they won't keep you there for long, given the fact that every one of your competitors is using these same techniques to achieve the same goals.

Imitation (and the resulting loss of advantage) is much more unlikely if you create a set of complementary and interdependent best practices spanning the enterprise, Porter says. For example, **Wal-Mart Stores Inc.**'s continuous replenishment

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Customer Satisfaction **90**
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ILLUSTRATION BY JEFFREY PELO

program (CRP) is complemented by its warehouse/store location layout and its strong-arm vendor relationships, which are, in turn, complemented by high-volume sales, which are supported by its low-price structure, which is made possible by its cost-efficient CRP system—you get the idea. A competitor might copy one or two pieces of this chain, but it would be exponentially more difficult to mimic them all.

That's happy news for many winners of our eighth annual CIO-100 awards, who have achieved and sustained success from complementary best practices in key business categories. At **Federal Express Corp.**, our only three-category winner and the subject of our featured profile, Frederick W. Smith, chairman, president and CEO, knows isolated practices won't prevail for long with the likes of **UPS** and DHL gunning for him. "You've got to combine best practices with innovation to really accomplish world-class results," Smith says.

Innovative, complementary best practices can be cultivated anywhere, but we wanted to explore the areas currently considered most crucial for organizational improvement. We reasoned that we could find these hot spots by identifying the most popular areas of best practice benchmarking. Discussions with benchmarking associations and experts helped us single out five such areas: customer satisfaction, supply chain/logistics management, human resources management, finance/accounting practices and global operations.

It will undoubtedly be noted by our readers that the information systems function is conspicuously absent from this list. Rest assured that there are numerous acknowledged IS best practices among many of the 1995 CIO-100 award winners. But information management has become such an integral enabling process for every other business practice that we felt it didn't make sense to separate it. And frankly, it may be this ubiquitous supporting role that caused many benchmarkers and the gurus we talked with to pass over IT as a distinct practice to be benchmarked. So for purposes of this issue, think of IS as a ghost category, hovering behind and woven throughout the other five.

While we've covered the winning ways of customer satisfaction and service previously (see *CIO*, August 1993), it remains a top priority for business, so we don't mind taking another look. One thing we found that wasn't as evident a few years ago is an increased understanding that excellence in customer satisfaction is best achieved by a combination of layered, complementary practices and attitudes—measurement, relationship management, customer intimacy and a customer-oriented culture. Discrete and isolated practices, no matter how finely tuned, won't yield the reputations enjoyed by such 1995 CIO-100 winners as **United Services Automobile Association**, **Southwest Airlines** or **Deere & Co.**

Supply chain management, a set of practices that looms large for more than just the Wal-Mart mega-retailers of the world, also functions best as a series of corresponding activities. From suppliers to customers; from the procurement of materials to product design to post-consumer recycling—the best integrated supply chain reinforces all these links equally. Many of our winners, particularly the several auto makers on the list, are well on their way toward this ideal, while others have honed their own special link to greatness, such as UPS in shipping or **Texas Instruments Inc.** in procurement.

Human resources management has been the foster child of the business functions for too long. Now more companies are realizing that HR practices do add value to the bottom line and can support or sink efforts in every other part of the business, from customer service to loss control. At the same time, the traditional patriarchal contract between company and employee is being redrawn. Lifetime employment and enduring loyalty to a firm have been reduced to quaint nostalgia by the demands of downsizing, self-directed work teams and customer-focused orientations. This year's CIO-100 companies in the HR category distinguish themselves by institutionalizing practices that promote their across-the-board business goals and at the same time support the new employer/employee relationship model. For example, **Raychem Corp.** takes pains to coach employees in career development, which encourages their growth but also ensures that Raychem cultivates required future skills.

Finance/accounting is a bit more isolated than our other best practice categories. Yet this function is a hot area for improvement because the competitive business environment increasingly demands that costs, time and human resources be wrung out of financial processes. Thirty-day, three-week and even three-day monthly closings will no longer suffice. **Motorola Inc.** has used IT to squeeze that operation down to a couple of days, while **The Charles Schwab Corp.** and **Dun & Bradstreet Corp.** are looking to offload day-to-day accounting drudgeries to sophisticated automated systems in order to free their finance people for value-added projects.

Finally, global operations is another touches-on-everything category. Many companies that operate internationally, such as **Benetton Group SpA** and **McDonald's**, replicate a worldwide practice standard backed up with globalized systems in order to achieve consistency and efficiency. Such systems incorporate every area of the business, not just operations peculiar to Tanzania or the Tyrol. At the same time, many of our winners, such as the Radisson hotel chain (**Radisson Hospitality Worldwide**) and **KFC** restau-

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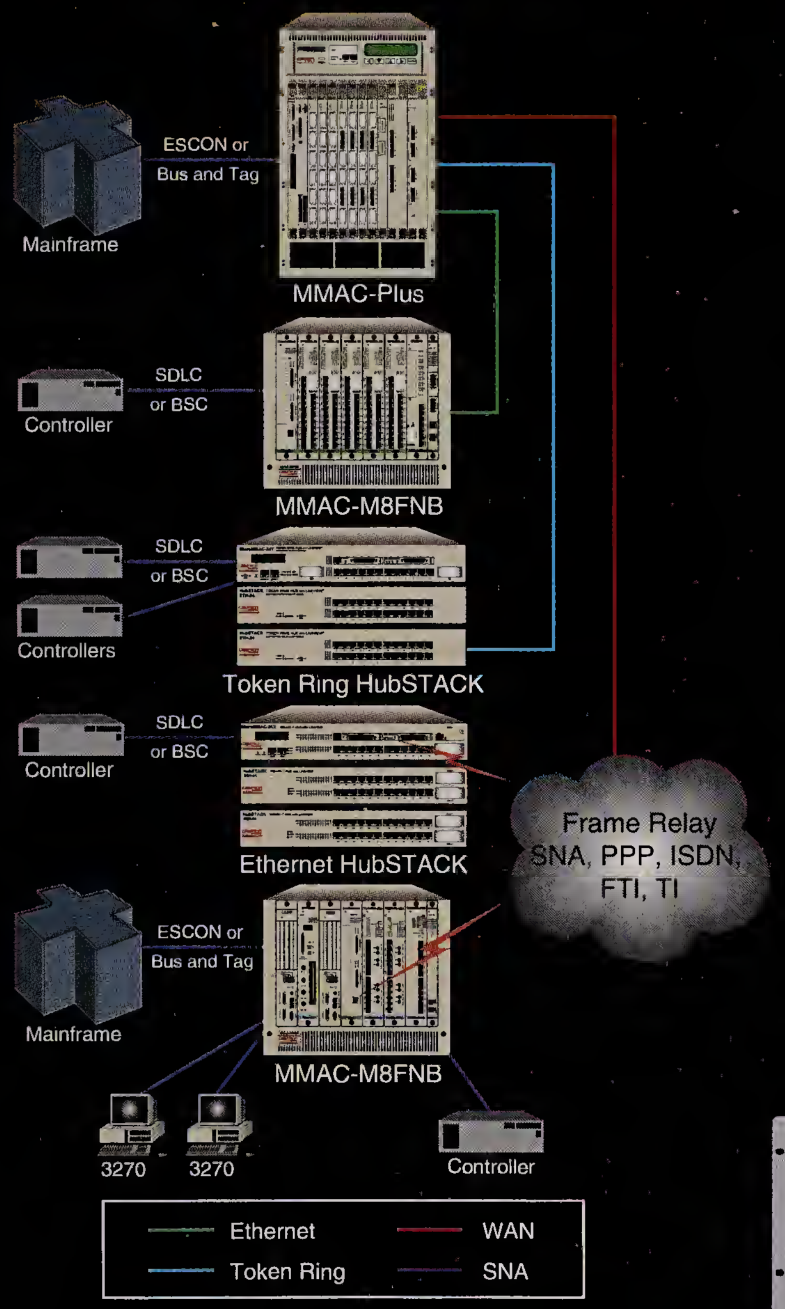

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Corporate Headquarters: 35 Industrial Way, Rochester, NH 03867 • (603) 332-9400 • Fax: (603) 337-2211 • Internet: http://www.ctron.com rants, strive to cultivate a global brand image while delivering goods and services in a manner that's locally customized. For these firms, training, communications and global partnering practices are key.

The concept of complementary best practices and the interdependence of these categories are validated by the fact that we have 10 organizations voted as winners in more than one category (and many more were nominated in multiple areas). Best practices at these firms are like adjacent cogs in a clockwork mechanism whose teeth interlock repeatedly as they work their way around. Keeping these cogs well oiled and replacing worn gears before they compromise competitive advantage is the way to stay ahead, and we at *CIO* hope these 100 winners and their practices will serve as inspiration and models for your own cog work. **–Richard Pastore**

1995 CIO 100 BEST PRACTICES WINNERS

3M **62**

AMP Inc. **90**
AT&T Corp. **62**
AT&T Universal Card Services Corp. **14, 62, 90**
Advanced Micro Devices Inc. **102**
American Honda Motor Co. Inc. **76**
American International Group Inc. **76**
Ames Rubber Corp. **62**
Amoco Corp. **102**
Asea Brown Boveri Ltd. (ABB) **76**

Baxter International Inc. **12, 46, 56**
Becton Dickinson & Co. **46, 56**
Ben & Jerry's Homemade Inc. **62**
Benetton Group SpA **26, 76**
Body Shop International PLC, The **76**

CCH Inc. **102**
Cadillac Motor Car Division, GM Corp. **90**
Caterpillar Inc. **46**
Charles Schwab Corp., The **26, 102, 110**
Chrysler Corp. **14, 46**
Citicorp **76**
Coca-Cola Co., The **76**
Colgate-Palmolive Co. **62**
Corning Inc. **62**

Deere & Co. **26, 90**
Dell Computer Corp. **76**
Digital Equipment Corp. **102**
Dun & Bradstreet Corp. **26, 102**

Eastman Chemical Co. **14, 90**

Fairmont Supply Co. **46**
Federal Express Corp. **14, 26, 32, 46, 62, 90**
First Union Corp. **102**
Ford Motor Co. **14, 76, 102**
Four Seasons Hotels Ltd. **14, 90**

GE Appliances **90**
GTE Corp. **62**
General Electric Co. **14, 102**
Gillette Company, The **76**

Hewlett-Packard Co. **14, 46, 90**

IBM Corp. **14, 102**
Industrial Distribution Group Inc. **102**
Infiniti, Div. of Nissan Motor Corp., USA **90**

Johnson & Johnson **62, 102**

KFC (PepsiCo Restaurants International, Asia) **26, 76**
Kaiser Foundation Health Plan Inc. **62**
Kelly Services Inc. **102**
Kent School **90**

L.L. Bean Inc. **14, 90**
Lands' End Inc. **14, 90**
Lexus Div., Toyota Motor Sales, USA Inc. **14, 90**
Lifescan Inc. **46**

McDonald's Corp. **14, 26, 76**
Merck & Co. Inc. **62**
Merck Sharp & Dohme **62**
Milliken & Co. **14, 46**
Minnesota Industrial Tools Inc. **46**
Mobil Corp.**62**
Mondex Natwest Bank PLC **76**
Monsanto Co. **102**
Motorola Cellular Infrastructure Group (CIG) **90**
Motorola Inc. **14, 26, 62, 102**

Nestlé S.A. **76**
Nordstrom Inc. **90**

Otis Elevator Co. **76**

PNC Bank Corp. **102**
Pfizer Inc. **102**
Pratt & Whitney **46**
Procter & Gamble Co., The **14, 46**

Radisson Hospitality Worldwide **26, 76, 84**
Raychem Corp. **26, 62, 70**
Richfood Inc. **90**
Ritz-Carlton Hotel Co., The **62, 90**

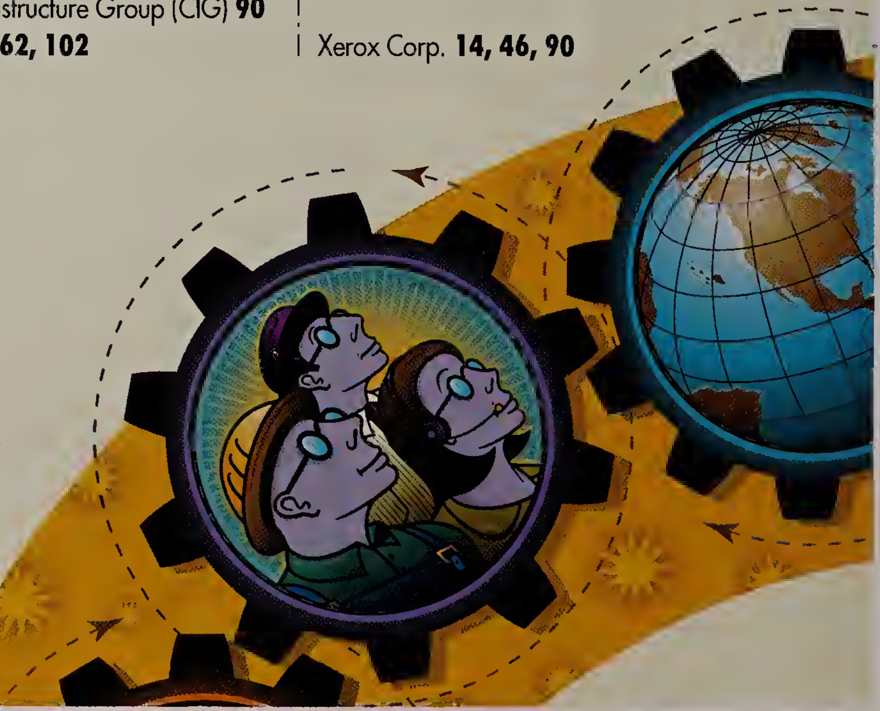
SC JohnsonWax **46**
Saturn Corp. **62, 90**
Shell Oil Co. **76**
Solectron Corp. **90**
Southwest Airlines **14, 26, 90**
Starbucks Coffee Co. **62**
Syntex (USA) Inc. **102**

TRW Inc. **102**
Texas Instruments Inc. **14, 26, 46, 62**
Toyota Motor Sales, USA Inc. **46**

Union Carbide Corp. **102**
United Parcel Service of America Inc. **14, 26, 46**
United Services Automobile Association (USAA) **26, 90, 98**

W.W. Grainger Inc. **46**
Wal-Mart Stores Inc. **26, 46**
Wegmans Food Market Inc. **14, 46**
Whirlpool Corp. **14, 76**

Xerox Corp. **14, 46, 90**



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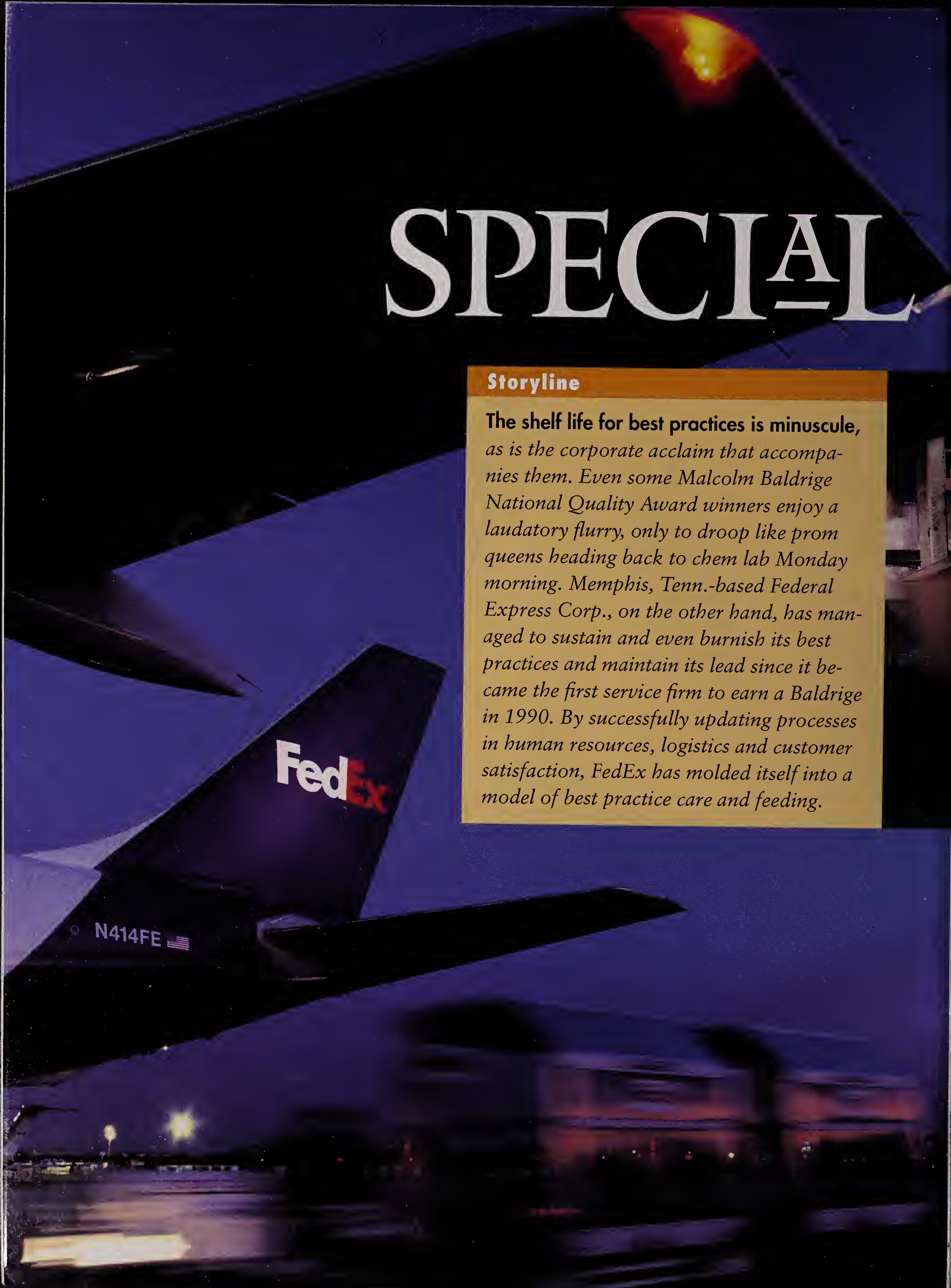


Storyline

The shelf life for best practices is minuscule, *as is the corporate acclaim that accompanies them. Even some Malcolm Baldrige National Quality Award winners enjoy a laudatory flurry, only to droop like prom queens heading back to chem lab Monday morning. Memphis, Tenn.-based Federal Express Corp., on the other hand, has managed to sustain and even burnish its best practices and maintain its lead since it became the first service firm to earn a Baldrige in 1990. By successfully updating processes in human resources, logistics and customer satisfaction, FedEx has molded itself into a model of best practice care and feeding.*

DELIVERY

BY RICHARD PASTORE

The Federal Express SuperHub at the Memphis, Tenn., airport is a grungy, steamy, Metropolis-like warren where 171 miles of conveyor belts intertwine like gigantic hissing tapeworms. Diesel-spewing forklifts and cargo tugs narrowly miss each other as they crisscross 240 acres of pavement. Eight thousand workers pile off shuttle buses at 11 o'clock every night to unload and reload 130 jumbo jets and untold trucks over a four-hour span. More than a million packages—everything from a container of human transplant tissue to a case of Nerf basketballs—slide down ramps and through the hands of human and robotic sorters. It's a wonder that anything gets where it's supposed to, but these logistics processes deliver over 99 percent of packages accurately and on time every day. So why does FedEx tinker with these industry-acknowledged best practices on an almost weekly basis?

PHOTOS COURTESY FEDERAL EXPRESS CORP.

"Nothing remains a best practice for very long; you either change or quickly fall behind," says Frederick W. Smith, the venerated chairman who invented the guaranteed express delivery market. Continual change is, in fact, a bylaw at Federal Express; Smith wrote it into management's bible when he founded the firm 24 years ago.

Continuous improvement is hardly business as usual across America. Even companies acknowledged for best practices tend to slow down a little, according to Alfred R. Pozos, formerly the director of the American Productivity and Quality Center's International Benchmarking Clearinghouse in Houston, and now a consultant in private practice. "Many either grow arrogant, burn out or encounter internal obstacles that stop them from changing," he notes. Others might be tempted to set their best practices upon pedestals like so many Ming vases gathering dust.

Why is FedEx different? For one thing, its cutthroat market insists upon it. Though the firm remains the segment leader with 48 percent of the overnight delivery market, its rivals have adopted much of the same tracking technology that it alone had in its Baldrige heyday. When the firm announced its FedExShip customer-premises tracking software (a simpler version of its PowerShip system) last fall, UPS (itself a 1995 CIO-100 logistics winner) announced a similar offering the same day. Again this spring, these competitors announced same-day package delivery service within hours of each other. "Anybody that gets cocky with this rate of change is foolish," Smith states.

Federal Express knows better from experience; it's had its share of failures. ZapMail, an e-mail service and 1,300-person operation, came a cropper in 1986. And the firm's expensive and bruising international expansion cost it $254 million in restructuring charges and ended a long streak of profitable quarters in 1992. (Although the international business is now profitable, the lingering stigma helped keep FedEx off the 1995 CIO-100 winner's list for global operations best practices.)

"I think they were humbled a bit by the difficulty they had," says Christopher Bogan, president and CEO of Best Practices Benchmarking & Consulting Inc. in Chapel Hill, N.C., and co-author with Michael English of *Benchmarking for Best Practices* (McGraw-Hill Inc., 1994). "That kind of experience caused them to sharpen their focus and understand what other things they could do to maintain leadership." According to our CIO-100 judges, that leadership is manifested through continually renewing best practices in customer satisfaction, supply chain/logistics and human

PRACTICES/IT COMPONENTS

Many of Federal Express's best practices rely heavily on support from information technology

LOGISTICS

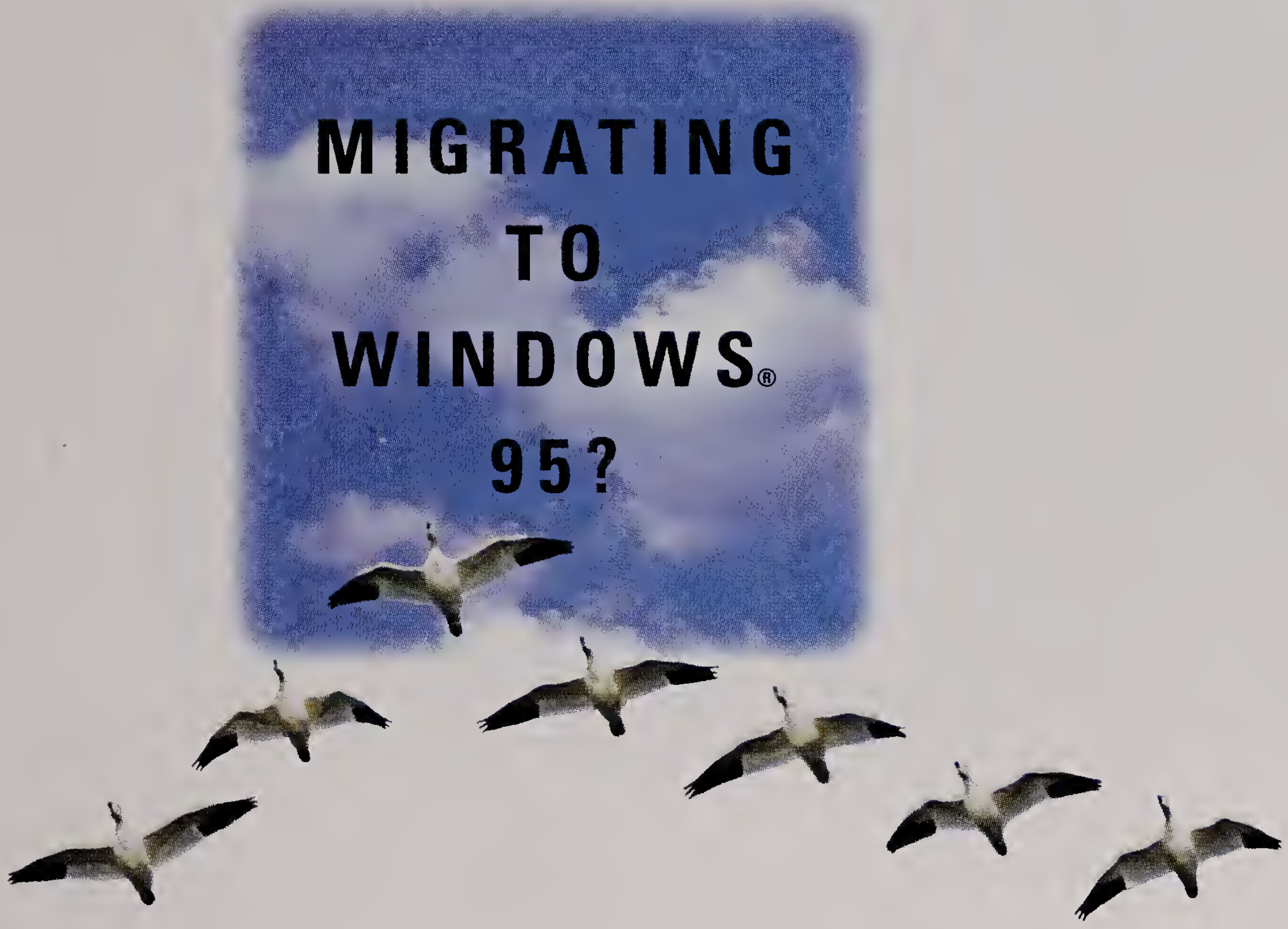
- COSMOS (global package tracking system)
  IBM IMS mainframe and workstation network, fronted by handheld SuperTracker
- Courier route planner (electronic mapping tool to help station managers optimize courier routes)
  Customized Arc Info GIS client/server application
- Product movement planner (global air and truck scheduling system)
  Unix workstation-based GUI with mainframe relational databases

HUMAN RESOURCES

- PRISM (online HR record-keeping system)
  IMS mainframe
- Leadership training (monthly, self-paced management training and testing)
  Satellite FX-TV broadcasts and IMS multimedia workstations integrated with mainframe databases
- Survey feedback action (32-item yearly employee survey to identify problems, morale and management perception)
  Conducted domestically via online terminals/IMS mainframe

CUSTOMER SATISFACTION

- Customer service workstation (support system for customer service call center reps)
  Multimedia software running on Hewlett-Packard 7000 servers and X terminals, integrated with mainframe databases
- Service quality indicators (weighted mathematical rating system for service failures, conducted daily)
  High-volume mainframe and workstation application
- PowerShip and FedExShip (customer-premises systems for shipping and tracking packages)
  PC-based GUI front ends to mainframe



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MICHAEL GLENN, DENNIS JONES *and* **FREDERICK SMITH** *(from left): Continuous improvement is a must.*

PHOTO BY MARC BERLOW

resources management.

Customers have come to regard accurate, on-time overnight delivery as a given, even a commodity. Now, they ask, what *else* can you do to satisfy me? FedEx conducts broad and targeted surveys several times a year to find out. One such survey last year prompted a change in a customer claims-handling practice that was already earning the highest satisfaction ratings in the industry. "Why did we change that? Because research showed that handling claims on the first day boosted satisfaction rates dramatically," explains T. Michael Glenn, senior vice president of worldwide marketing, customer service and corporate communications. To increase its ability to resolve claims on the first call, FedEx empowered front-line customer service reps in its call centers to process claims of up to $300 in value.

As a whole, FedEx's call center operations are a popular benchmark for telephone customer support. But the company, not satisfied with a state-of-the-art multimedia customer service support system, is halfway through an upgrade that adds embedded performance support. Reps who choose the novice setting on their new X-terminal workstations are walked through procedures onscreen while they are talking to customers. There's no need to transfer callers or put people on hold to look up data. By accessing help databases not available with the old 3270 terminals, the Hewlett-Packard 7000 Series server-based system provides instant hints and prompts on everything from the price for shipping a killer whale to how to reboot a FedEx-Ship system. "The customer service workstation is not something customers see, but it has a positive impact on being able to respond to them," says Alan Hammersmith, principal at consultancy A.T. Kearney Inc. in Chicago. Besides enhancing support, the embedded help is expected to reduce offline rep training time from six weeks to two.

Customers have seen their "absolutely, positively" guaranteed next-day delivery times tighten up over the years from noon to 10:30 a.m. Now UPS is offering an 8:30 a.m. delivery. FedEx has yet to counter, claiming 8:30 delivery is only a small niche market. But it's had an implementation plan for such a service on the shelf for more than five years, Glenn says.

FedEx's logistics practices began with Smith sorting packages on a card table in a Memphis airplane hangar. Today the supply chain has been forged into a worldwide ballet of 108,000 people, 484 jets and 35,000 trucks choreographed with timing so fine that a variance of 30 minutes can separate success from failure. But recent market forces have demanded greater attention to squeezing costs out of package-handling logistics. FedEx's domestic margins have trended downward since fiscal 1991, from 13.3 percent to last year's 9 percent. Though the drop has been less in the last two years, Wall Street has been complaining that cost-cutting efforts have not compensated for volume discounts and growth in the lower-margin, second-day delivery business.

Smith acknowledges that urgency levels have shifted. "In the past several years, the international business has consumed much of our attention," he says. "Now that it's profitable, the emphasis can shift to lowering unit costs, but not to the detriment of other objectives."

In the logistics area, additional package-sorting hubs like the one planned for Fort Worth, Texas, will cut costs by creating a less circuitous air route for parcels to travel. The year-old Product Movement Planner, a client/server system for planning air and truck schedules, employs a built-in algorithm that finds the least-costly way to get a package to its destination. Previously, schedulers planned air travel independently, with no integrated means for analysis or justification.

Efficiencies are being sought in local courier practices as well. Productivity applications are now being rolled out to help field-station managers in weekly volume forecasting, courier scheduling and city route planning. The tools are already making the stations' light-duty days more cost-efficient by encouraging more appropriate staffing levels.

Even the renowned COSMOS package scanning/tracking system has been modified to trim costs. In over 400 locations, a PC-attached scanning gun augments the older, more sophisticated handheld SuperTracker used to read parcel bar codes. The lower-cost gun technology reads the same information but at a faster rate and reduced per-package cost.

In the labyrinthine hubs themselves, package-handling processes are constantly being evaluated. "We're investing millions to enhance sorting capability," says Dennis H. Jones, a CPA who worked his way up through finance and sales to succeed Ron Ponder in 1991 as CIO and senior vice president in charge of logistics. Historically, back-room practices like hub sorting have gotten lower priority than customer contact points when it came to automation, says Jones. But volume growth and the increasing complexity of the operation beg more attention for such areas.

Smarter sorting capabilities, including automated overhead laser scanners (already in use at some stages of the hub process) are under consideration, Jones says. Slated

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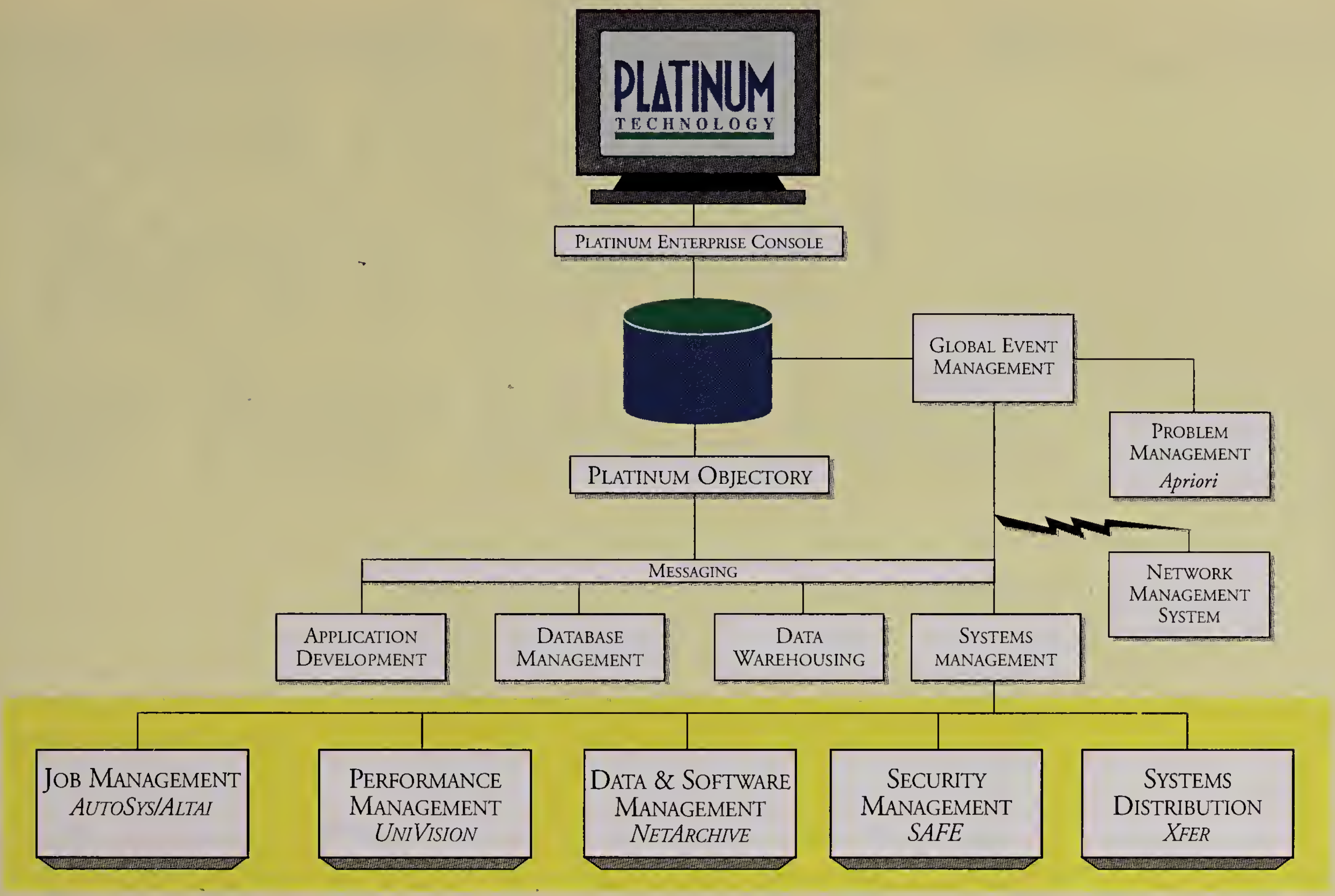
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GO TO THE HEAD OF THE CLASS

FedEx discovers that benchmarking is a valuable tool, even for a market leader

For a company that considers itself a learning organization, it's surprising that Federal Express Corp. was not well-noted for benchmarking. Even the Malcolm Baldrige National Quality Award Committee, after anointing the firm in 1990, chided FedEx for its weak showing in the benchmarking area.

"Because they were the leader and creator of their industry, they weren't very motivated to compare themselves with others," recalls Christopher Bogan, president and CEO of Best Practices Benchmarking & Consulting Inc. in Chapel Hill, N.C. Bogan, who advised FedEx in its Baldrige bid, says the company has since turned things around.

"We've made benchmarking a regular part of management training. It's one tool we insist [managers] use," says FedEx Chairman Frederick W. Smith. Though efforts are not formally structured or centralized, each officer in the organization is expected to stay on top of best-in-class organizations. CIO Dennis H. Jones, for example, spends 15 percent of his discretionary time on benchmarking IT practices.

A group that reports to Smith, Quality and Process Improvement, is charged with educating managers in the basics of benchmarking and encouraging its use throughout the divisions. The group also acts as a clearinghouse for requests from other firms wishing to benchmark with FedEx. The numbers here can be overwhelming. Human resources honored more than 350 requests over the last year. As burdensome as this might seem, FedEx wastes few chances for learning. "We work just as hard to extract information as to give it," says T. Michael Glenn, senior vice president of worldwide marketing, customer service and corporate communications.

One might wonder what a Federal Express can learn from the likes of Winkie's Wonder Widgets. But it's relatively easy to pique the interest of a firm as voraciously curious as FedEx, says Michael Spendolini, author of *The Benchmarking Book* (American Management Press, 1992) and principal of MJS Associates in Laguna Beach, Calif. "If you want to get FedEx's attention, offer them the results of your own research on a shared problem," he says. Also, try discussing future strategies rather than just relating history. "Don't ask them to talk about old news."

–R. Pastore

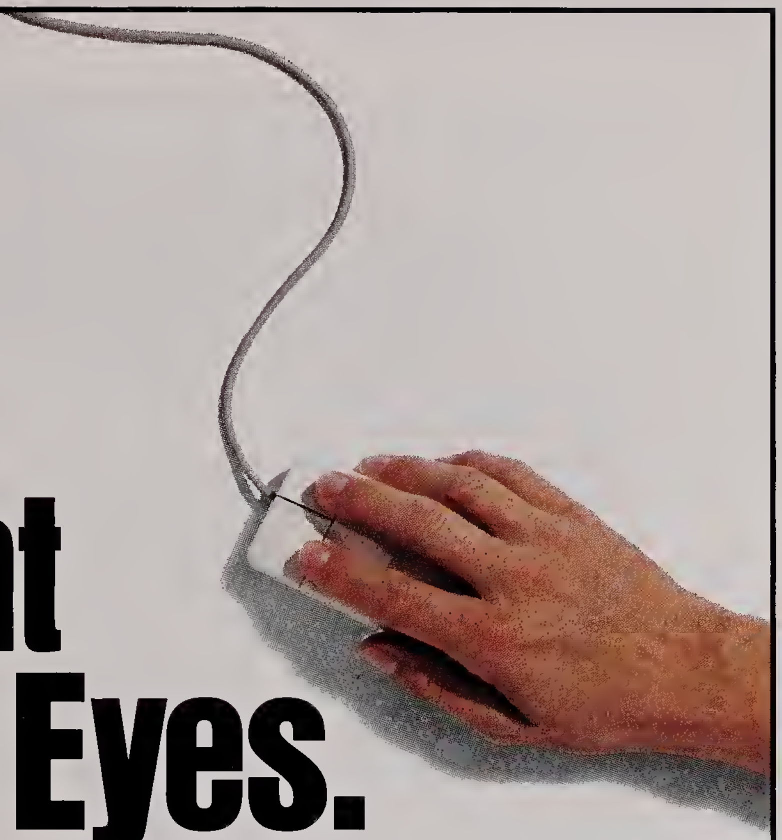
FedEx's latest benchmarking endeavors include the following:

- Studies of large customer call centers that yielded data on training, system configuration, controls and technology
- A study of a foreign market competitor that showed how to reduce paper in the logistics process
- A strategic partnership with the Red Cross that will provide insight into techniques for operating in disaster areas

for such automation within two years is the "document sort," in which workers manually sort by region a minimum of 38 pieces per minute.

In many companies, workers fear or even fight such replacement by automation. But at FedEx, ranked among the top 10 in the book *The 100 Best Companies to Work For in America* (New York Doubleday/Currency, 1993), the fear is muted by enlightened human resources practices. For example, FedEx offers displaced employees other positions in the firm, even guaranteeing their current salaries for 18 months if they must take a lower-level position. But if employees still have a gripe with management, they can take advantage of the venerable and oft-benchmarked grievance system, Guaranteed Fair Treatment (GFT). The program provides three levels of managerial review and appeal for employee grievances, including an ultimate review by Smith and other top corporate officers. As might be expected, however, the company's growth has taxed the current GFT system. The appeals board has routinely been dealing with 15 to 18 grievance cases a week.

Consequently, a GFT modification is being piloted in four locations to allow employees to skip the lengthier three-tier process and opt for a single peer board of review, whose decision is binding. "The peer review option will manage things more effectively in terms of the officers' time," says James A. Perkins, senior vice president and chief personnel officer.



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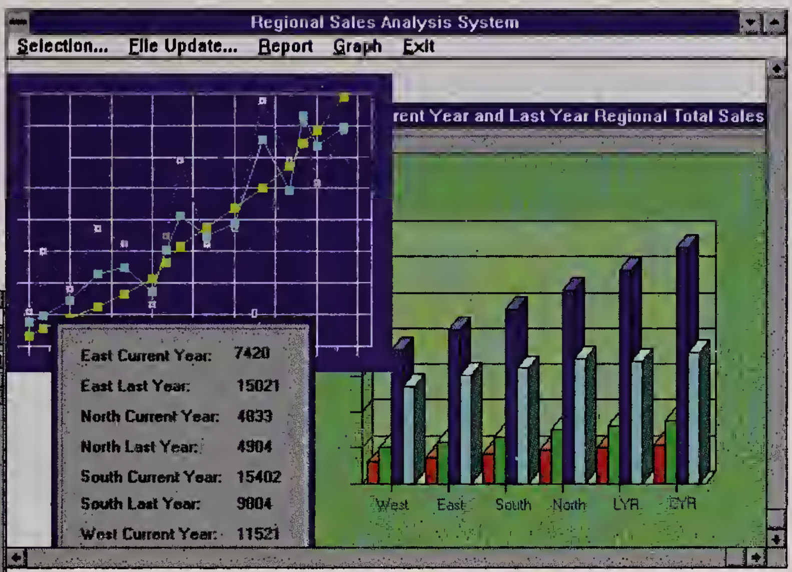
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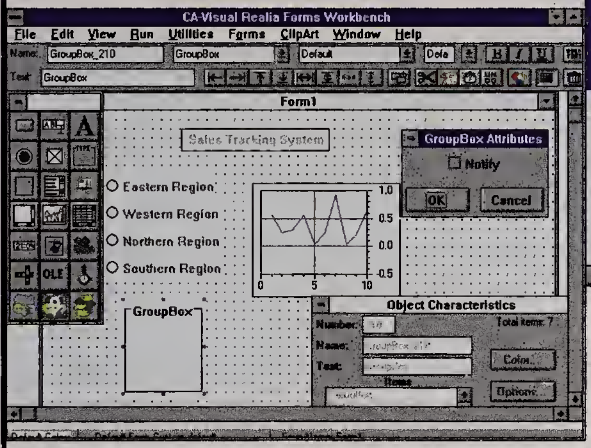

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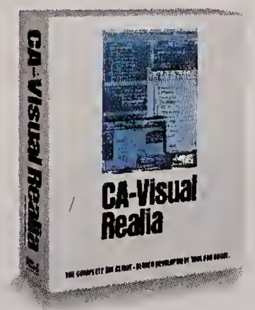

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When it was buying up overseas firms during its early foreign forays, FedEx drew complaints from observers that it was imposing its corporate culture and processes with an ugly American disregard for local custom. The firm found human resources best practices such as GFT among the toughest to export. FedEx wisely decided to accommodate cultural differences by watering down GFT and Survey Feedback Action (a major employee survey)—particularly in Japan, where workers are unaccustomed to complaining or rating their managers.

For such modifications, the input of the people within the foreign country is vital, Perkins says. For other firms hoping to export their practices, Perkins recommends experimenting with pilot programs "rather than taking and applying something tried and proven in the U.S."

Federal Express has since shifted its global expansion strategy from one of acquisition to partnerships and joint ventures with overseas firms. For any company trying to link up with global partners, the big trick is creating a seamless melding of services. For FedEx, that task falls to the information technology division. "We have blended IT capabilities by integrating systems either directly or indirectly," Jones says. "For the customer, it appears seamless." Jones sends domestic IT staff overseas to help get the job done. For example, an IT team traveled to AEI, a large freight forwarder and FedEx customer in London, to implement a link between AEI's own shipping system, LOGIS, and FedEx's COSMOS. That allows the LOGIS terminal to act as a FedEx PowerShip tracking and shipping terminal at the same time. So, when AEI employees want to process a FedEx shipment, they simply select FedEx from their LOGIS customer screens and proceed as they normally would.

In many companies, business best practices in one function are inextricably linked with those in other areas. It's no different at FedEx, where human resources and logistics excellence enable each other and support customer satisfaction. The interdependency necessitates an equally cozy interaction among the officers in charge. Proposals for process changes are routed to each area officer, who discusses the issues during a meeting-packed "Hell Week" once a month. "If someone wants to make a practice change that could be detrimental [to another business function], we'll point that out and explain why that shouldn't be done," Glenn says.

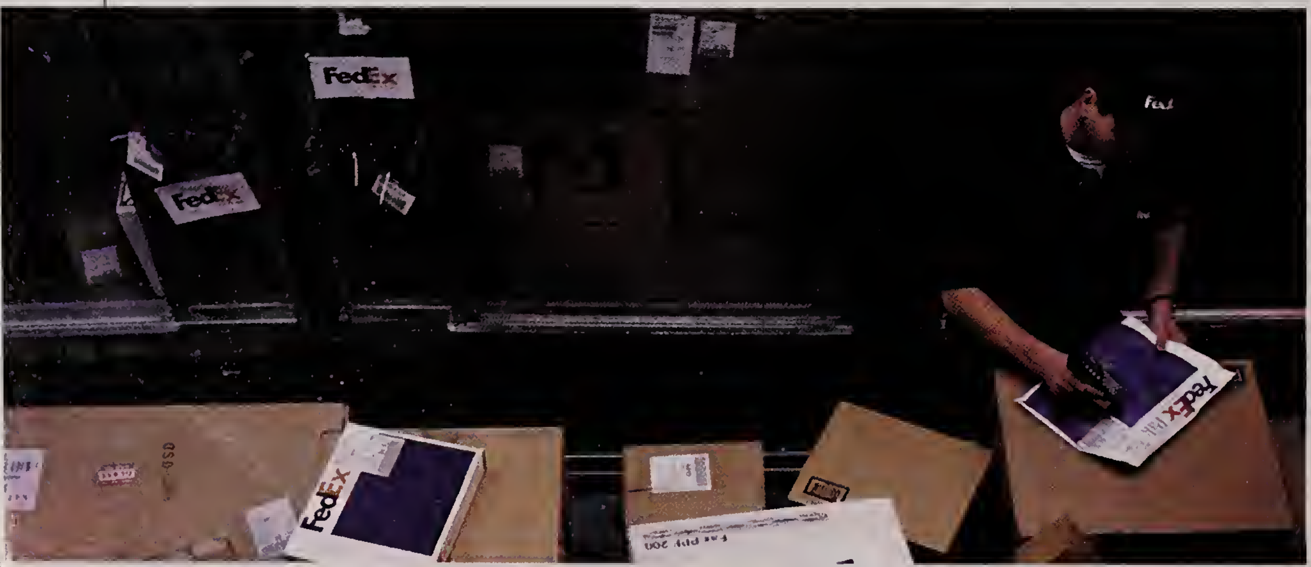
The executives also take pains to communicate and probe proposals with staff in the trenches. "Sharing information is a critical part of the management process of FedEx," Glenn notes. Given the firm's global span, it helps to have your own satellite television network. "FX-TV" broadcasts live corporate meetings and briefings as well as periodic performance data and training courses worldwide.

FedEx tries to standardize when it latches onto an effective practice, but "Quality Action Teams" are free to form when needed to re-examine processes and address operating problems, according to consultant Bogan. "If a team creates a solution that operates at a higher level than an existing practice, then the rest of the system migrates toward that center of excellence," he says. For example, Bogan recalls one hub sorting team that developed a mnemonic device that improved its ability to remember sort codes. When that proved more effective, it was communicated to others (typically via a monthly FX-TV broadcast), and the other teams followed suit. FedEx rewards such employee initiatives with personal recognition and bonuses through its "Best Practice Pays" incentive program, another tool for encouraging care and feeding.

Even standardized practices must continually justify themselves with a payoff, and measuring that return is a further means of spurring change. Equipping larger customers with the PowerShip dedicated on-site shipping and tracking system paid off in higher volume growth from these users. Measuring this provided a strong motivator for the company to introduce the simpler FedExShip last fall for smaller-volume customers, in the hopes that it too would drive growth.

HR practice payoffs are measured in morale levels and hard-dollar savings. However, Perkins shares the plight of many HR directors in fighting an uphill battle to win recognition for some HR practices as bottom-line contributors. "We haven't yet put a dollar value on them that our CFO would accept," Perkins says. As for logistics, FedEx employs an elaborate, weighted rating scheme called Service Quality Indicators to measure not the successes but a dozen types of service failures—from lost packages to deliveries that are even one minute late.

Perhaps the broadest sign of enduring best practices is the public's generic adoption of a market leader's name. In the tradition of referring to Coke for cola and Xerox for copying, if you want something delivered overnight, you "FedEx" it. Smith's company has embraced the trend, adopting the nickname as its official consumer moniker—proving the continuous-change company is even willing to alter its name to better live up to its image.



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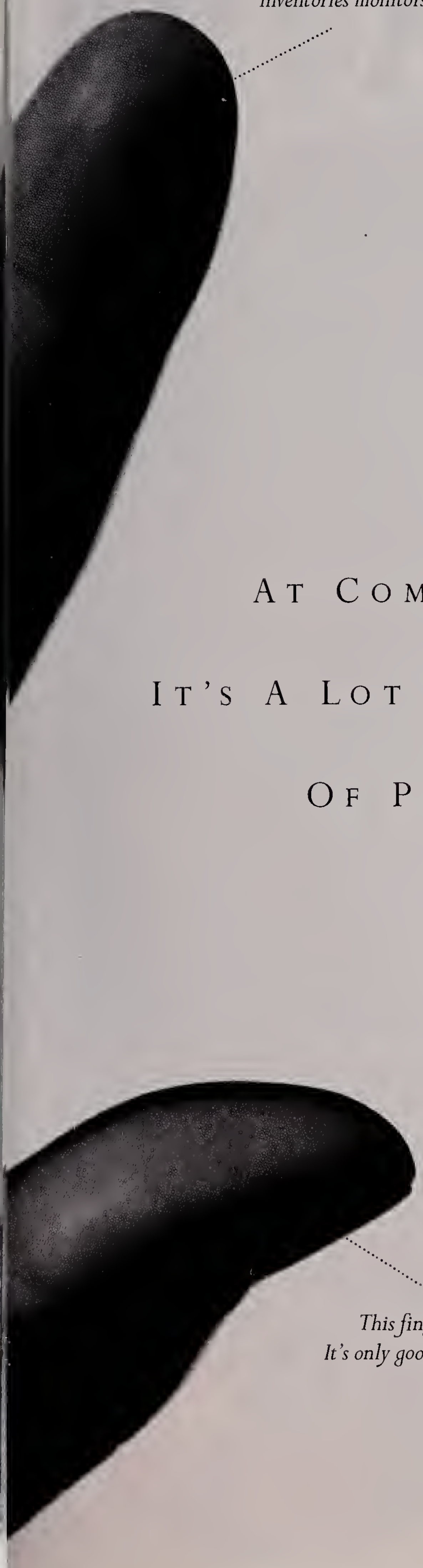

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THE CHAIN

Successful management of the supply chain can save a company both money and time, but CIO-100 winners are taking it a step further. Using some innovative tactics and a variety of IT, they're pursuing—and achieving—a strategic advantage.

BY E.B. BAATZ

WHEN TACTICS DON'T KEEP PACE WITH technology, the results can be bloody.

Look back to July 3, 1863, in Gettysburg, Pa. At 3 p.m., 11,000 Confederate infantrymen begin their advance across a mile-wide open field. The rifles used on both sides are muzzle loaders, which take only 30 seconds to load and fire. Soldiers can fire faster, across longer distances and more accurately than before because ordnance technology—guns and bullets—has advanced. But, tragically for the 6,000 men who get hit in that single charge, military tactics have not.

In the business world today, the figurative battle is just as bloody. Witness the wholesale distribution industry. The number of distribution companies dropped from 350,000 in 1985 to 300,000 in 1995 and is predicted to fall to 250,000 by the turn of the century. Despite that, three private industrial distributors honored in this year's CIO-100 are all surviving, indeed, thriving.

Why? The answer lies in a powerful and dramatic but often misunderstood business tactic called supply chain management.

Conceptually, the supply chain extends from "dirt to dirt," says Thomas Day, a director of the supply chain practice at accounting and consulting firm Arthur D. Little Inc. in Cambridge, Mass. The chain begins when the raw material is extracted from the earth and ends when the product is reused or disposed of in a landfill.

The management tactic: to integrate and manage the entities and operations in between—from suppliers to customers, from the procurement of materials to product design to post-consumer recycling, and from warehousing goods to distributing product to customer order fulfillment to accounting. "Supply chain management is com-

GANG

plicated because, with few exceptions, no one person or department in the corporation has total ownership or responsibility for all of these elements," says Tony Friscia, president of Boston-based consulting company Advanced Manufacturing Research Inc.

Despite the complications, the benefits of integrating the supply chain are alluring. The short-term goal is often simply to reduce unnecessary inventory (thereby increasing working capital) and speed up production and responsiveness to consumers. "The biggest strategic and tactical benefits from supply chain reengineering are speed and more speed," says R. Michael Donovan, a Natick, Mass.-based consultant and author of the forthcoming book *Reengineering the Supply Chain: Strengthening Manufacturing's Weak Links*. But the long-term strategic goal, which CIO-100 winners are pursuing vigorously, is much more far reaching: to meet customer needs with the right product delivered to the right place on time, thereby gaining market share and increasing profits.

To manage these complex sequences and relationships, supply chain integration depends upon an arsenal of information technologies, including bar code scanners, electronic data interchange (EDI), distributed computing, expert systems and simulation software. Just as important are the softer management arts of partnering with suppliers and customers, reengineering old stovepipe functions like procurement and accounting, and developing cross-functional, even cross-corporate, teams. CIO-100 winners are employing all these arts and sciences in their long march to a rational supply chain.

What truly distinguishes the CIO-100 supply chain winners is that they've all demonstrated extraordinary gains from their efforts and they all continue to improve. Even **Xerox**, the undisputed leader of supply chain management, continues to push the envelope. Thanks in large part to its renowned quest for quality, the office equipment manufacturer reduced its supplier base tenfold from 5,000 in 1980 to 500 in 1990. Reductions in inventories and product cycle time improved the company's return on investment by three points. But as recently as 1992, "we still couldn't tell you how much the company spent worldwide on transportation or customs duties," says Steve Tierney, vice president of integrated supply chain.

To push supply chain improvements further, Tierney, who had been the company's worldwide purchasing executive and general manager of European operations, was named to his current position in February of 1992. The idea, he says, is to give everyone working in Xerox "a line

ILLUSTRATION BY JEFF BRICE

CIO 100 SUPPLY CHAIN/LOGISTICS WINNERS...

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
Baxter International Inc. *Deerfield, Ill.*	Kathy White *CIO*	Timothy D. Houghton *Dir. Inbound Ops., U.S. Distrib.*	9.3B	53,500	*Medical products and services*
Becton Dickinson & Co. *Franklin Lakes, N.J.*	Alfred J. Battaglia *Group President & CIO*	Alfred J. Battaglia *Group President & CIO*	2.6B	18,600	*Medical devices and diagnostic systems*
Caterpillar Inc. *Peoria, Ill.*	N/A	James W. Baldwin *VP, Parts & Service Support*	14.3B	54,000	*Mfr. of construction, mining & agricultural equip.*
Chrysler Corp. *Highland Park, Mich.*	Susan J. Unger *Exec. Dir.—IS*	Thomas T. Stallkamp *VP, Procure. & Supply & GM-Large Car Ops.*	52B	112,000	*Mfr. of automobiles & accessories*
Fairmont Supply Co. *Washington, Pa.*	J.D. Zinaich *Director— Admin. Svcs.*	C.F. Whirlow *Exec. VP, Ops.*	256M	650	*General line industrial supplies*
Federal Express Corp. *Memphis, Tenn.*	Dennis H. Jones *Senior VP & CIO*	Dennis H. Jones *Sr. VP & CIO*	8.5B	108,000	*Express transportation*
Hewlett-Packard Co. *Palo Alto, Calif.*	Robert R. Walker *Director, Corporate IS*	Carl E. Snyder *Supply Chain Off., Dir., Procurement*	25B	98,200	*Measurement, computation & communication products*
Lifescan Inc. *Milpitas, Calif.*	Rhoda Verner *Director, IS*	Paul DiFraia *VP, Operations*	N/A	1,300	*Diabetes-, blood-, glucose-monitoring products*
Milliken & Co. *Spartanburg, S.C.*	Jim McCabe *Director of IS*	Boyce Smith *Dir. of Fiber Procurement*	N/A	14,000	*Textile manufacturing*
Minnesota Industrial Tools Inc. *Eden Prairie, Minn.*	Ron Veith *General Manager*	Rick Kurschner *Customer Service Mgr.*	16M	62	*Specialty distributor of production tooling*

Legend: Revenues $ Employees 👤

continued on page 50

of sight back from the supplier all the way to the customer." And that requires continuing to move from a business structure based on functions such as accounting and purchasing to one based on processes such as supply chain management. "This movement from functions to processes is hard culturally, and it puts a tremendous demand on information," says Tierney.

Information, and by association information technology, is indeed the locomotive that powers the supply chain train. "The whole idea is to replace inventory with information," says Mort Harris, vice president of sales and marketing for **Minnesota Industrial Tools**, a privately held, $25 million distributor of cutting tools, abrasives, coolant and machine tool accessories. By using electronic data interchange and bar code scanners, Minnesota Industrial now controls its customers' inventories more efficiently.

"As the customer uses up a particular product, they scan in the bar code, after which their computer calls our computer overnight to alert us what to ship," explains Harris. "Each customer has his own electronic warehouse." The just-in-time barcoding system saves customers on inventory costs, gains Minnesota Industrial new sole-source customers and has incidentally allowed the firm to fund a 61 percent increase in the number of line items in its catalog without increasing the dollar value of inventory. More importantly, these techniques enable the tiny firm to coexist beside JIT industrial distribution innovators like the $3 billion mega-middleman **W.W. Grainger** and $256 million **Fairmont Supply**, both also winners in this year's CIO-100.

While the supply chain revolution among industrial distributors and manufacturers such as CIO-100 winners **Pratt & Whitney** and **Caterpillar** has been focused on JIT delivery, the retail and consumer products industries have been pushing their own brand of supply chain excellence. It's called the continuous replenishment program (CRP) or, more broadly, efficient consumer response (ECR). The main idea is that point-of-sale data is conveyed from the retailer to the supplier in real-time so that store shelves can be automatically replenished.

The highly publicized partnership between **Wal-Mart Stores** and **Procter & Gamble**, of course, serves as an outstanding example of the benefits to be gained from the best practice of CRP. (For more on Wal-Mart, see "Retailing in Real Time," CIO, August 1992.) P&G began applying CRP with Wal-Mart in 1989, and almost immediately the retailer began to realize benefits in the way of increased inventory turns (on the order of a 50 percent increase, according to some reports) and reductions in out-of-stocks, the number of times it runs out of a P&G product.

For P&G, however, the benefits have been a bit more

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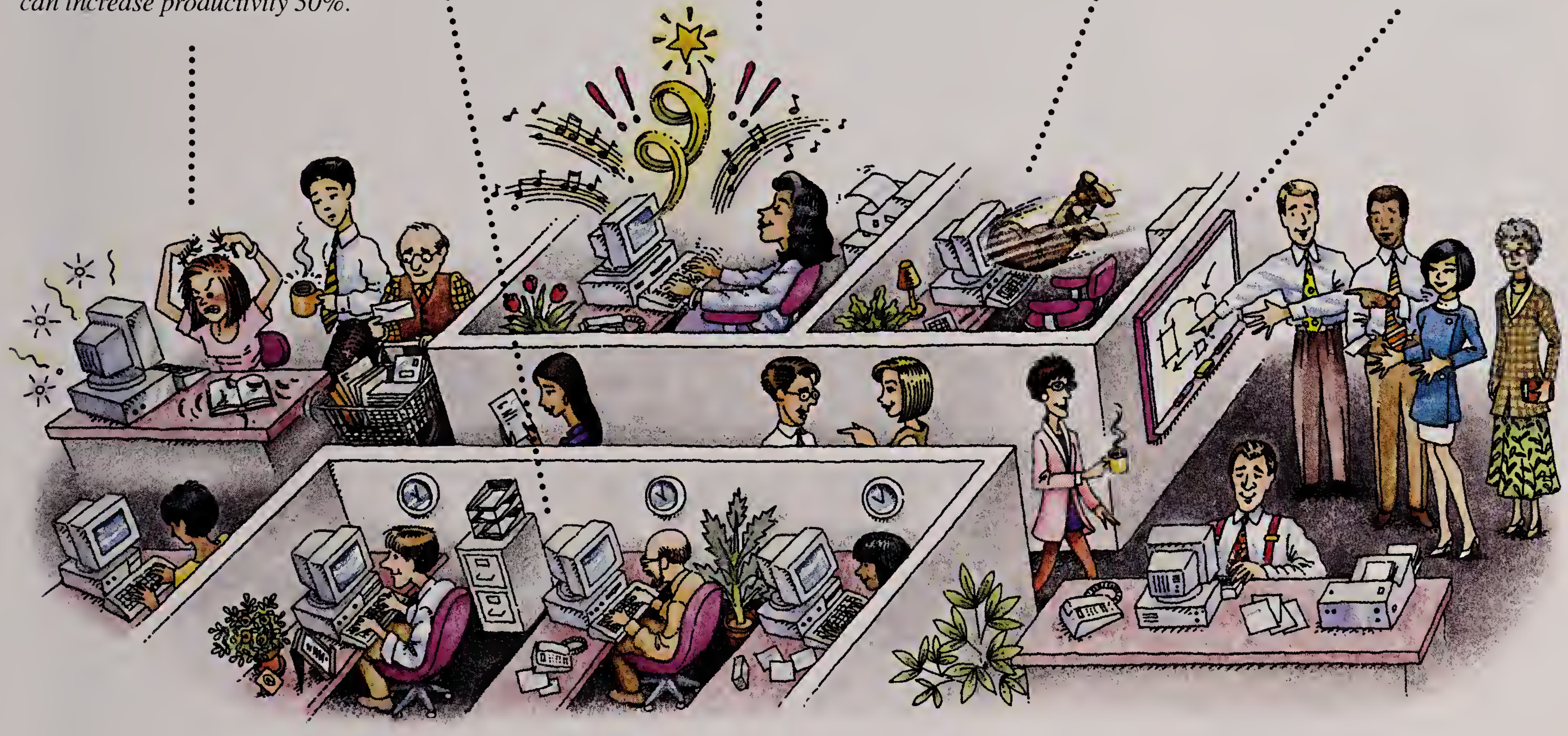

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CIO 100 SUPPLY CHAIN/LOGISTICS WINNERS

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
Pratt & Whitney *E. Hartford, Conn.*	Dennis Blanchfield *Director of MIS*	Mark Coran *Exec. VP, Operations*	5.7B	30,000	*Manufacturing—jet engines & parts*
Procter & Gamble Co., The *Cincinnati*	Frank Caccamo *VP, Mgmt. Systems*	Gary T. Martin *Sr. Vice President*	30.3B	96,500	*Mfr. of cleaning, paper, beauty, food products*
SC JohnsonWax *Racine, Wis.*	Neal R. Nottleson *Senior VP & CFO*	David C. Henry *VP, Cust. Service & Logistics Mgmt.*	3.5B	13,000	*Chemical specialty products*
Texas Instruments Inc. *Dallas*	Jodie Ray *Manager, IS & Services*	Mark Hillman *Mgr., Corporate Business Sys.*	10.3B	56,000	*Electronics*
Toyota Motor Sales, USA Inc. *Torrance, Calif.*	Doug Plescia *Vice President, IS*	Richard Gallio *Group VP, Parts, Srvcs. & U.S. Products and Cust. Rel.*	21.5B	18,000	*Automotive distribution & sales*
United Parcel Service of America Inc. *Atlanta*	Frank Erbrick *CIO*	N/A	19.6B	315,000	*Transportation/shipping*
W.W. Grainger Inc. *Skokie, Ill.*	James T. Ryan *VP, Info. Services*	John W. Slayton *Sr. VP, Product Management*	3.0B	11,300	*Distrib. of maint., repair & operating supplies*
Wal-Mart Stores Inc. *Bentonville, Ark.*	Randall D. Mott *Senior VP & CIO*	Lee Scott *Executive VP*	82.5B	640,000	*Discount retail merchandising*
Wegmans Food Market Inc. *Rochester, N.Y.*	Don Reeve *Dir. of Info. Services*	Mike Bargmann *Director of Distribution*	2.0B	23,000	*Supermarkets & home improvement centers*
Xerox Corp. *Stamford, Conn.*	Patricia M. Wallington *Vice President & CIO*	Alan R. Monahan *VP, Mfg. Support*	17.8B	86,300	*Document-processing*

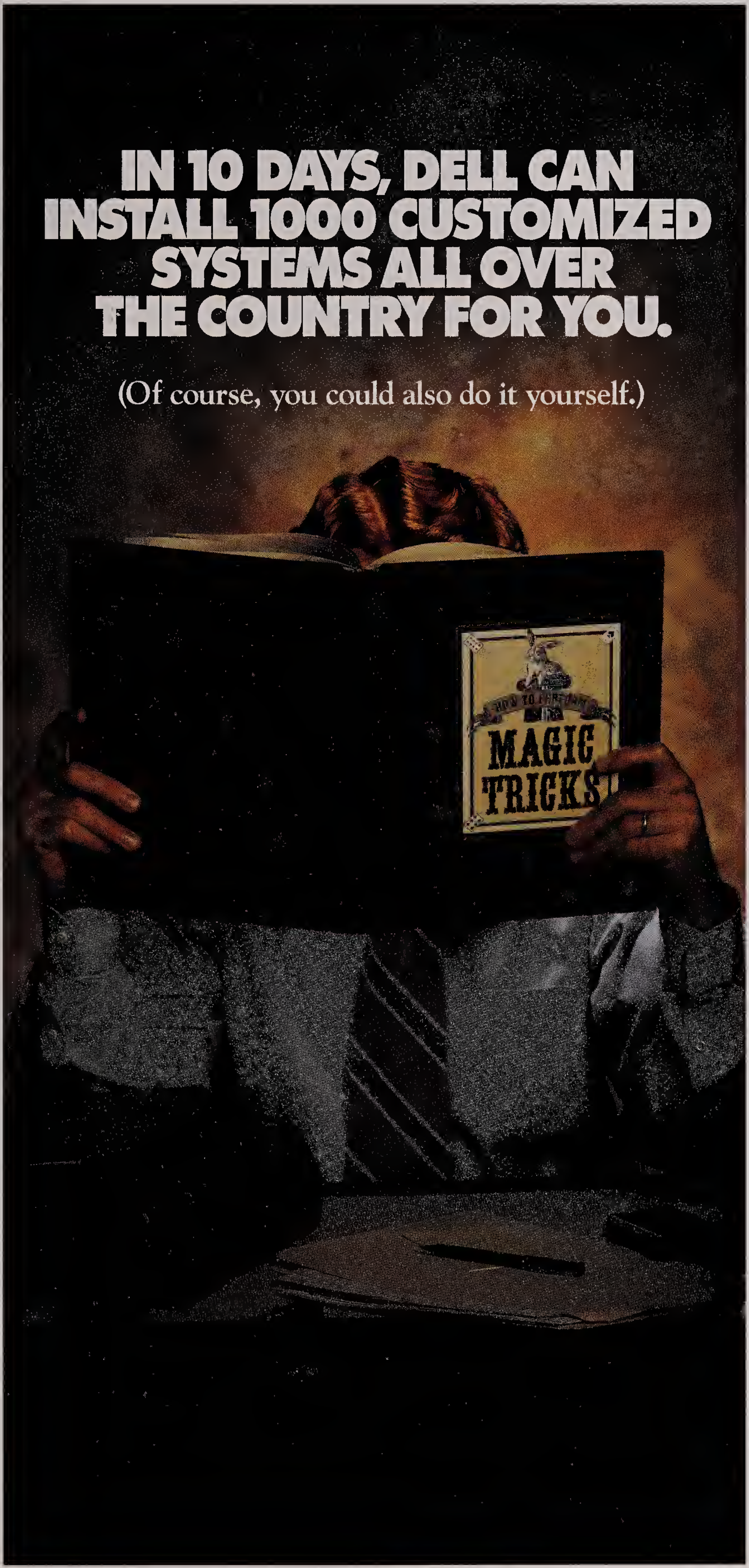
elusive, which explains why critics of CRP and JIT have leveled the accusation that these practices merely shift the inventory burden from buyer to supplier. The best practice trick for the supplier, however, is to get more retailers to use CRP. One needs a "critical mass" so that the manufacturer can get inventory reductions in the factory through better production scheduling, explains Mike Kremzar, general products supply manager for customer service worldwide for P&G. To that end, P&G sold its home-grown CRP software to IBM two years ago in order to increase the acceptance of its CRP system; in addition, it has aggressively sought to bring smaller regional chains, such as CIO-100 winner **Wegmans Food Market**, into the CRP fold. As a result, from May 1994 to May 1995, P&G's share of customers using CRP has risen from 25 percent to 35 percent, which is "just about at critical mass," says Kremzar.

> **"The whole idea is to replace inventory with information."**
>
> *–Mort Harris*

Now, according to both Wal-Mart CIO Randall D. Mott and P&G Vice President of Management Systems Frank Caccamo, the emphasis is shifting to integrating the supply chain back a step to strategic raw material producers and streamlining logistics, or the movement of goods, between manufacturer and retailer. In the attempt to get raw material producers integrated, P&G is first establishing standard data and codes for all the raw materials worldwide. "The hope is that if we can get our suppliers to take a global view with us, then we will begin to leverage this investment," says Caccamo.

On the logistics side of the equation, "the replenishment cycle has moved from weeks to days to hours," says Mott. "So, we are looking to tailor not just the type of merchandise delivered but the frequency of replenishments to each store." And P&G is responding by simplifying its pricing structure and standardizing order requirements across different lines of business so that customers like Wal-Mart can get a variety of product brands on one truck with one invoice and only one set of payment terms. Wal-Mart and other CIO-100 winners are also implementing activity-based costing (ABC) for their supply chain analyses. (For more about ABC, see "Inspired Accounting" on Page 110.)

Of course, when it comes to logistics excellence, carriers like CIO-100 winners **Federal Express** and **United Parcel Service** are way out in front. Using imaging technologies, EDI, bar coding, optical character recognition and wireless technology, the entire small-package delivery chain has been revolutionized. The carriers nowadays have become critical cogs in the move to streamline and rational-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ize the supply chain.

"The biggest opportunity for value added between shipper and carrier is creation of virtual inventory," said Frederick W. Smith, chairman, president and CEO of Federal Express, at the annual Council of Logistics Management Conference in Washington in the fall of 1993. "Standard operating procedure is to put inventory in a single distribution point, put it in standard boxes and move it to a metropolitan area, break it down, then move it to stores. That costs more than if it's shipped direct from manufacturer to point of sale.... Information allows the taking of inventory out of the system." (See "Special Delivery," Page 32)

Indeed, some companies are now simply outsourcing their logistics functions to Federal Express. For example, chip maker National Semiconductor Corp. is saving itself millions in costs annually by doing so. These relationships explain why partnerships are so important in the supply chain revolution (see "Striking Matches," Page 46). "These days, the battle is not between my company and my competitor; it's between my supply chain and my competitor's supply chain," says Jack Barry, a senior principal and manager of enterprise resource operations for EDS Management Consulting Services in Cambridge, Mass.

> **"The chain is only as good as its weakest link. We'll have very little extra inventory to handle any inefficiencies, which will mean we'll go on backorder much quicker if one link in the supply chain breaks."**
>
> *–Richard Gallio*

Not every company has leapt to tighten up its supply chain by outsourcing logistics, but every one of the CIO-100 winners in this category appears to be working on reengineering its logistics and/or materials procurement function. High-tech companies have been among the most active. **Hewlett-Packard**, for example, benchmarked against Federal Express in order to learn how to improve the materials-handling process in its shipping operations.

Yet HP made this year's roster not because of its logistics operations but because of its world-class global materials procurement processes. A highly decentralized company of nearly 60 divisions, HP developed its own software called PROMIS to receive and maintain procurement specifications data, update contract activity, maintain information on suppliers, and electronically transmit orders and forecasts to suppliers. Its international procurement operations, heavily dependent on IT, allow company buyers to get any part, anytime, anywhere in the world.

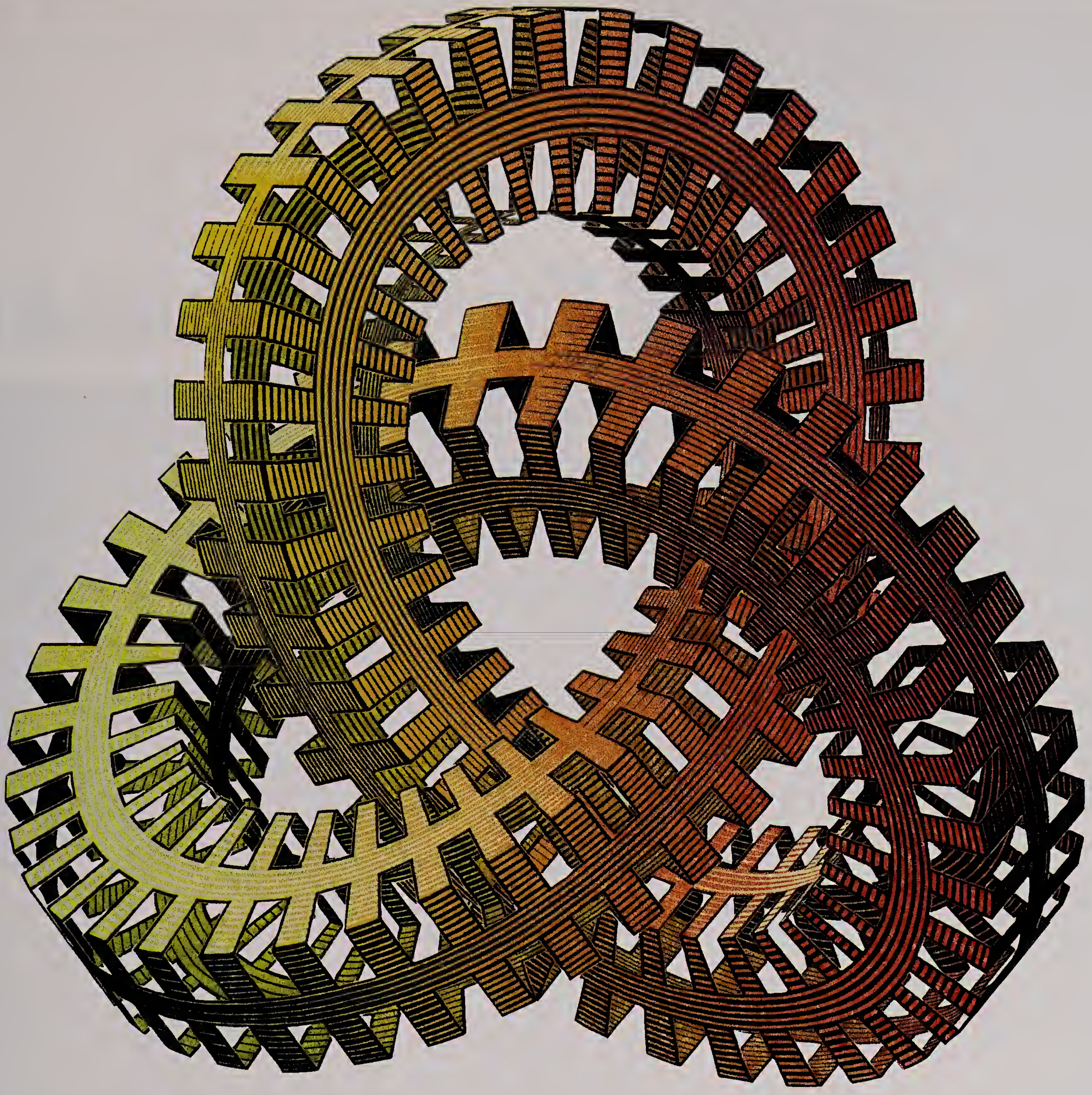
"Cost of goods sold is the largest single expense in any electronics company," says Carl E. Snyder, director of procurement with responsibility for supply chain management. "HP's cost of goods sold [expressed as percentage of revenue] rose to 62 percent in 1994, up from 52.8 percent four years ago, so we need to manage costs closely." (HP is also busy reengineering its customer order fulfillment process. See related story on Page 90.)

While HP declined to discuss results from its procurement process, **Texas Instruments**, another electronics manufacturer on the CIO-100 winner's list, was more forthcoming. For example, reengineering the procurement of inexpensive items has reduced TI's purchasing costs from $20 to $5 per line item. "We've gotten a good 5 to 7 percent annualized cost reduction, and we're still going," says Doug Schwartz, manager of procurement development. Now the company is reengineering the procurement process for its most expensive supplies, huge semiconductor manufacturing equipment like steppers and wafer fabrication clean rooms.

Still, the most leading-edge companies are not reengineering just procurement or logistics but are working all ends of the supply chain to squeeze out cost and gain a competitive advantage. Some of the most ambitious attempts are being made by Japanese auto makers that are trying to create an international stock-free delivery chain. But being willing to get components delivered from another country direct to the assembly line requires cool nerves. "The chain is only as good as its weakest link," says Richard Gallio, group vice president for parts, services, U.S. products and customer relations at **Toyota Motor Sales, USA.** "We'll have very little extra inventory to handle any inefficiencies, which will mean we'll go on backorder much quicker" if one link in the supply chain breaks, he says.

Gallio, who oversees the supply chain for Toyota's North America parts operations, says his company has spent 10 years changing its corporate culture to manage the supply chain. "We started in the warehouse and extended what we learned to the freight companies." Now the company is piloting a program to drive out dealers' inventory costs and expects to free up $200,000 in inventory per dealer for its 1,200 dealers. First step: The dealers are all upgrading their computer systems in order to be able to hook into Toyota's information pipeline.

Yet customer demands, not cost savings, are ultimately what is driving the reengineering of the supply chain, Gallio says. "Before we began any of this, we first had to ask, 'What are our standards for servicing the customer?'" The answer sets the strategy, and only then do fill rates, inventory policies, information technology road maps and supply chain partnerships get determined. CIO-100 winners in the supply chain battlefield know that tactics, not just technology, will continue to be their secret weapon. CIO



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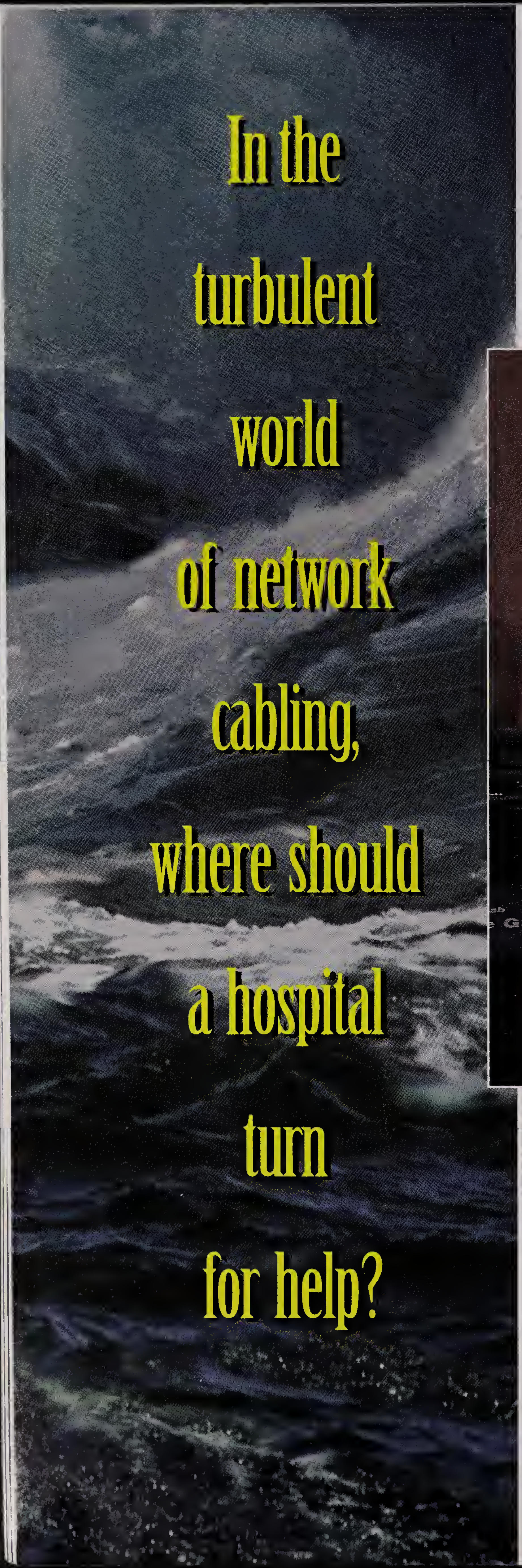

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In its quest to stay ahead in the increasingly competitive medical-devices industry, Becton Dickinson found that cultivating relationships with business partners was the critical step

BY E.B. BAATZ

IF YOU HAD WALKED INTO ANY HOSPITAL WAITING room in the mid-1980s, you would likely have found a cadre of sales reps come to ply their wares. Nothing unusual about that. But suppose that eight of those fidgeting salespeople had come—unbeknownst to each other—from the same company, Becton Dickinson & Co., to sell its syringes, lab equipment, catheters, cellular image analyzers and scalpels.

ALFRED BATTAGLIA: *Using partnerships and IT to give Becton Dickinson a competitive edge*

PHOTO BY PETER VIDOR

More than just a waste of waiting room chairs, that scenario was a symptom of what executives at the Franklin Lakes, N.J., manufacturer of medical devices and diagnostic systems had begun to realize was a classic supply chain problem. Lack of coordination among the salespeople—who represent the final link in any company's supply chain—reflected a much larger problem.

"Our strategic planning folks had been doing some analysis, and we saw three distinct challenges—hospitals, distributors and suppliers—that were going to force Becton Dickinson to respond on multiple levels simultaneously," says Alfred J. Battaglia, the company's group president of supply chain as well as its CIO. So, in an early morning stroll along the Pebble Beach golf course before a meeting in 1988, then-CEO Raymond V. Gilmartin gave Battaglia, then president of Becton Dickinson's VACUTAINER Systems Division, the job of taking this quintessential decentralized company's supply chain and making it work as a rational, unified and cohesive unit.

"Becton Dickinson found itself suddenly in a highly competitive environment," says Bruce Lovenberg, a consultant with Ernst & Young LLP in Iselin, N.J. The emergence in the mid-1980s of big, powerful buying groups such as HMOs meant the playing field had changed forever. To continue delivering high-quality products at low cost, the company had no choice but to reconsider its business strategy, he says.

The new strategy sounded deceptively simple: to create an integrated supply pipeline that delivers the best products and services at the lowest total system cost. Also critical would be the creation of an information pipeline to support and enhance the product flow pipeline.

But the reality, of course, was not so simple. "Eight years ago, when I started this, I was viewed as the enemy," Battaglia says. Little wonder, because he was spearheading a classic reengineering project that would shake old political structures, challenge long-held management philosophies and turn the corporate culture upside down.

One of the first things Battaglia tackled was the problem of logistics inefficiencies. The company's trading partners were ordering supplies from eight different Bec-

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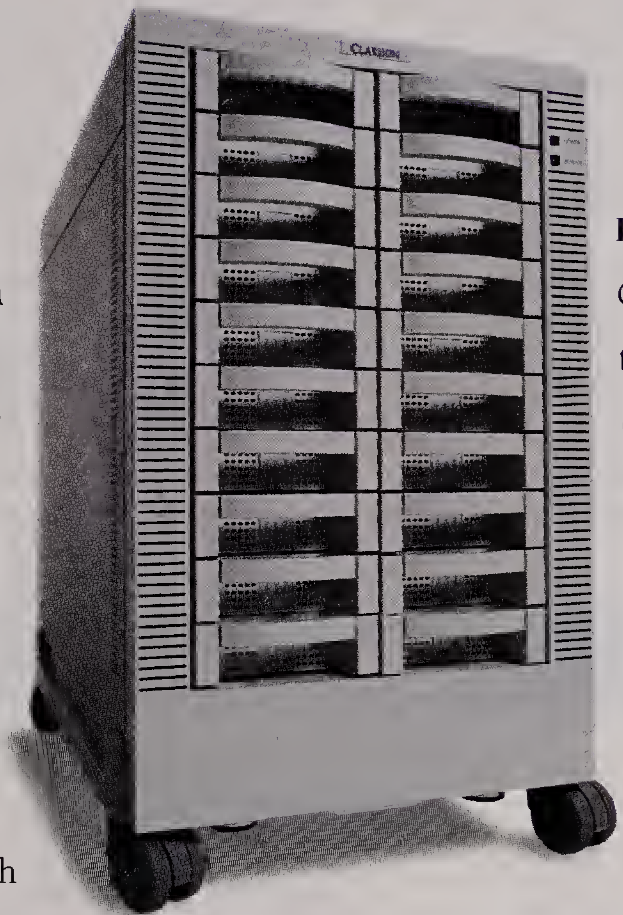

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ton Dickinson divisions, getting eight different invoices and unloading eight different trucks. Battaglia hired Nicholas J. LaHowchic to begin the process of streamlining the logistics function on a worldwide basis.

"The idea was to respond as a single-source supplier by providing consolidated shipments, scheduled shipments and palletization," says LaHowchic.

Information technology was a key to that strategy. For example, the company invested in a state-of-the-art electronic data interchange (EDI) network called Speed-Com built on its IBM AS/400 platform using Premenos Corp. translator software. Speed-Com allows Becton Dickinson to notify the customer in advance of a shipment and to offer electronic order entry, invoicing, contract negotiation and rebates.

IN PROFILE

Company: *Becton Dickinson & Co., Franklin Lakes, N.J.*

Annual Revenues: *$2.56 billion in fiscal 1994*

Number of Employees: *18,600 in 1994*

Principal Line of Business: *Manufactures and sells a broad range of medical devices and diagnostic systems*

Best Practices: *Strategic partnering with customers, distributors and carriers; marketing of EDI services to trading partners as a competitive differentiator; automation of logistics services with carriers in order to provide guaranteed delivery*

Enabling Technologies: *EDI; automated storage and retrieval warehouse using clustered Digital VAXs, programmable logic controllers and Beumer sorting systems; AS/400-based mainframe system with a half-dozen key enterprisewide client/server applications in various stages of development or rollout*

Furthermore, in a move to coordinate 22 distribution centers serving Europe, the Middle East and Africa, Becton Dickinson invested $45 million in a pair of state-of-the-art distribution centers in Temse, Belgium. The company built a new transaction-processing system that works with its order-processing system so that when an order is received, the shippers are automatically scheduled and the picking process in the warehouse is created online. Then high-tech automated retrieval vehicles automatically get the shipment from the warehouse and bring the entire pallet to the loading dock, where humans—entering the process for the first time—put the product on the truck.

But more important than the capital investments, says LaHowchic, has been developing a business culture that thrives on partnerships. "The retail and consumer products industries are ahead of us in continuous replenishment, but we are very good at relationship building with our channel partners," he says.

For example, in 1991 Battaglia, LaHowchic, then vice president of corporate logistics, and Edward F. Mickens, then director of corporate transportation (now retired), crafted a unique partnership with a regional less-than-truckload (LTL) carrier, Preston Trucking Company Inc. of Preston, Md., in which Preston agreed to offer full truckload (TL) service along some routes for Becton Dickinson. "Normally, an LTL carrier will not do this, because their operations are not set up to be profitable with TL," says Mickens. But the teamwork paid off, saving Becton Dickinson $100,000 in the first year and $180,000 the second, and reducing transit time by 15 percent. Preston (since acquired by Yellow Trucking Co.) gets to handle more shipments for the manufacturer, and key customers now receive their orders from a single carrier.

Partnering with customers has been another key element in Battaglia's plan to convince all the company's divisions to join the supply chain train. "We haven't placed a lot of emphasis on inventory savings; instead, we have approached supply chain management from a customer service perspective," says Battaglia. For example, a partnership with health-care products manufacturer and distributor Baxter International (also a CIO-100 winner this year) saves Baxter in excess of $1 million annually.

"Instead of having Becton Dickinson fill inventory weekly to 87 distribution centers, now we have them replenish two main centers daily and we mix their products with our own products" for delivery to the end customer, says Timothy D. Houghton, Baxter's director of inbound operations for U.S. distribution. "That has allowed us to take upwards of 50 percent of the inventory out of the top 10 Becton Dickinson products that we stock."

For Becton Dickinson, results include more on-time deliveries, fewer delivery and documentation errors, faster replenishment cycle times and higher sales. And, incidentally, seven years after Battaglia began his supply chain journey, inventories as a percent of sales have come down too, from 19.4 percent in 1988 to 16.4 percent in the fiscal year ended Sept. 30, 1994. That change represents more than $75 million lower inventories on a global basis.

Indeed, the company is so pleased with its progress that in February 1995, LaHowchic was named president of Becton Dickinson Supply Chain Services, a newly formed operating division for North America, which will market IT and logistics services to the company's channel partners. Battaglia, in recognition of the information infrastructure challenges of integrating the supply chain, was given the second part of his title: chief information officer.

And those eight salespeople who were fidgeting in the hospital waiting room in the mid-1980s? Why, they've discovered that with supply chain integration and IT in hand, they spend less time waiting and more time selling.

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PERSONNEL

As workers enter the Knowledge Age, they find career paths that were once etched in stone are now impossible to decipher. Today's human resources managers have their work cut out for them.

BY MEGAN SANTOSUS

FORGET THE CAFE LATTE. WHAT PART-TIME employees really like about working at **Starbucks Coffee Co.** has a lot more to do with the benefits than the beverages. Employees who put in at least 20 hours a week at Starbucks enjoy a health benefits program that covers such things as doctor visits and hospitalization. These "partners"—as Starbucks calls its employees—also have short-term disability, dental insurance and training programs. And to make sure they feel like they have an investment in the Seattle-based company, part-timers are also given stock options. "We are committed to showing our partners that they come first with us in thought, word and deed," says Vice President of Human Resources Sharon Elliott. Sure, this is good for employees. But with a turnover rate about one-third lower than the competition's, it's also very good for business.

The traditional arrangement between employer and employee—lifetime employment in return for loyal service—has about as much relevance to today's business as an ENIAC computer. Work that formerly was carried out in functional "stovepipes" is now managed by teams of cross-functional, self-directed employees. Meanwhile, managers, constantly exhorting workers to raise the bar on quality and productivity, know that each success means only a momentary victory in the age of continuous improvement.

The situation is made even more complex because established ways of rewarding employees—promotions and bigger paychecks—are no longer viable options at many companies. As a result, HR management practices such as recruitment, training and development, employee empowerment, performance appraisals, reward systems and employee satisfaction programs carry more strategic weight than ever before.

What separates the best HR management practices from the rest? In today's workplace, the good ones manage to prepare, motivate and develop employees in ways that are consistent with the company's val-

BEST

ues, competitive objectives and overall strategies. "The most successful HR departments and practices are geared to solve real-life problems and capitalize on business opportunities," says Jac Fitz-enz, president of Saratoga Institute, an HR consulting firm in Saratoga, Calif. "If HR practices aren't contributing to the bottom line or adding value to the company, they are a waste of time and effort."

This year's CIO-100 winners in human resources management have implemented HR practices that take into account the changing nature of work and the new relationship between companies and the people who work for them. The key for these companies is developing HR practices that can find common ground between the overall business strategies and the needs and interests of individual employees.

Employees who are particularly good coaches or team players at **AT&T Universal Card Services (UCS) Corp.**, for example, are eligible for a variety of rewards including savings bonds, weekend trips or salary incentives. "The fundamental purpose of HR is to reward and recognize behaviors that significantly contribute to our business, either in economic or customer-value terms," says Ira Walter, senior manager of human resources at UCS.

HR practices must be tied to business objectives. Companies that preach quality above all else, such as **Ames Rubber Corp.** and **Motorola Inc.**, would not have won the coveted Baldrige Award if employees were still paid according to how many goods they can churn out per hour. Likewise, companies that want to follow in the footsteps of **Federal Express Corp.** and **The Ritz-Carlton Hotel Co.** by championing customer service must provide their employees with the tools and authority to solve customer problems.

Many CIO-100 companies excel at training and education programs designed to give employees the skills they need to succeed on the job. "Our mission in HR is to develop strategies that are going to attract, motivate and retain the kind of workforce that can handle speed, innovation and operational excellence," says J. Randall MacDonald, **GTE Corp.**'s senior vice president of human resources and administration. "We start by redefining the employer/employee relationship in the context of diversity, partnership, alternative work arrangements and a team-based approach," he says.

GTE provides comprehensive training programs for its 111,000 employees. According to MacDonald, the company spends roughly $150 million annually on

ILLUSTRATION BY NIKOLAI PUNIN

CIO 100 HUMAN RESOURCES WINNERS...

COMPANY	CIO	PRACTICE EXEC.	💲	👤	BUSINESS
3M *St. Paul, Minn.*	David P. Drew *Staff VP, IT*	Richard A. Lidstad *Sr. VP, HR*	15B	85,000	*Diversified manufacturer*
AT&T Corp. *New York*	Ron Ponder *Senior VP & CIO*	Hal Burlingame *Sr. VP, HR*	75B	305,000	*Comm. and computer products services*
AT&T Universal Card Services Corp. *Jacksonville, Fla.*	John McGee *Senior VP & CIO*	Mary Kay Gilbert *Sr. VP, HR*	30B	3,500	*Bank credit cards—Visa, MasterCard*
Ames Rubber Corp. *Hamburg, N.J.*	William D. Dolan *Manager of IS*	Robert Kenna *Director of HR*	50M	417	*Fabrication of elastomeric products*
Ben & Jerry's Homemade Inc. *Waterbury, Vt.*	Bob Kistner *Info. Svcs. Group Dir.*	Keith Hunt *Director of HR*	149M	575	*Ice cream & frozen yogurt manufacturing*
Colgate-Palmolive Co. *New York*	Bruce Johnson *Vice President, Global IT*	Doug Reid *Sr. VP, HR*	7.6B	33,000	*Global consumer products*
Corning Inc. *Corning, N.Y.*	Ken Freeman *Executive Vice President*	Kirk Gregg *VP, Exec. Resources & Emp. Benefits*	4.7B	30,000	*Comm., environmental and consumer products*
Federal Express Corp. *Memphis, Tenn.*	Dennis H. Jones *Sr. Vice President & CIO*	James A. Perkins *Sr. VP & Chief Personnel Officer*	8.5B	108,000	*Express transportation*
GTE Corp. *Stamford, Conn.*	Dennis J. Murphy *Assistant Controller—IT*	J. Randall MacDonald *Sr. VP, HR & Admin.*	20B	111,000	*Telecommunications*
Johnson & Johnson *New Brunswick, N.J.*	Ed Parrish *CIO*	Michael Carey *VP, Org., Planning & Dev.*	15.7B	81,500	*Health-care products*

Legend: Revenues 💲 Employees 👤

continued on page 66

training, including management-level courses that use computer simulation and interactive video. Executive-level managers can simulate what's it like to run a telecommunications company: They can look for ways to exploit strengths while minimizing the weaknesses, focus on the financial aspects of running the business, form strategic alliances with other companies or make investments in R&D.

At many companies, training programs focus on improving skills in such areas as quality, customer satisfaction and product cycle times. At Motorola, for example, employees from around the world must complete at least 40 hours of training annually. They can choose from a range of courses offered through Motorola University, where a CD-ROM-based program is used to teach employees about everything from statistical process control to Motorola's Six Sigma quality initiative.

Colgate-Palmolive Co. also emphasizes training that is directly transferable to the company's business. Through the Colgate Global Curriculum, employees worldwide receive training in functional areas such as advertising, sales and manufacturing. "Our curriculum focuses on improving the overall skill levels of our people," says Robert Joy, vice president of HR global operations. The training strives for consistency by taking the best practices from inside and outside the company and teaching them to employees throughout the world. More than 8,000 employees have received on-the-job training through the curriculum. "Continuous improvement in our operations has translated directly into improved business performance," asserts Joy. In fact, over the past decade, Colgate-Palmolive has seen its profit margins increase nearly 10 percent.

To respond to a rapidly changing telecommunications industry, GTE recently implemented an education and training effort for its 35,000 management- and executive-level employees. Computer-based simulation—which mirrors running a company and competing in the telecommunications industry—is a central part of GTE's training experience. Its core courses focus on teaching skill sets related to quality conformance, self-directed teams, customer satisfaction and loyalty, and targeting markets. "We needed to structure our training program in an effort to figure out what skills and knowledge our people have now and what will be required five years from now," says Jerry Tucker, director of education management and training.

To ensure that training is coordinated with the company's business objectives, strategic plans are reviewed annually so that changes can be incorporated into the courses where appropriate. More than 5,000 employees have attended the program, including GTE's chairman, and each attendee is required to complete a feedback survey. Although it's difficult to determine a payback, GTE is convinced that the programs are contributing to its bottom line. "The employees who have completed the program

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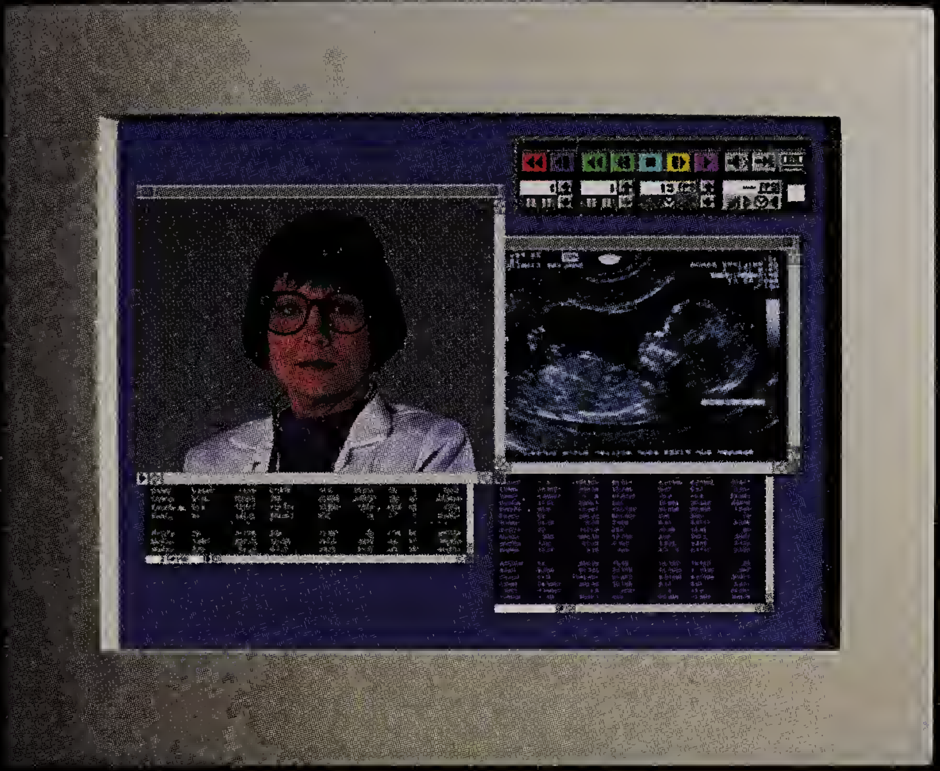

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Kaiser Foundation Health Plan Inc. *Oakland, Calif.*	N/A	James B. Williams *Sr. VP, Strategic Dev. & HR*	12B	90,000	*HMO—health care*
Merck & Co. Inc. *Whitehouse Station, N.J.*	Charles Pepper *VP of Corp. Computer Resources*	Steve Darien *VP of HR*	15B	47,500	*Research-based pharmaceuticals company*
Merck Sharp & Dohme *Sabana Hoyos, Puerto Rico*	N/A	Ernesto Vega *HR Dir. for Puerto Rico Ops.*	765M	301	*Human-health products*
Mobil Corp. *Fairfax, Va.*	A.J. Galante *SCS—Administration*	D.O. Fitzsimmons *Corp. Emp. Relations*	2.1B	61,000	*Oil and gas industry, petrochemicals*
Motorola Inc. *Schaumburg, Ill.*	N/A	Glenn Gienko *Sr. VP & Asst. Motorola Dir., HR*	22.2B	132,000	*Mfr. of electronic systems, wireless comm.*
Raychem Corp. *Menlo Park, Calif.*	Martin W. Wegenstein *Vice President, IT & CIO*	Stephen A. Balogh *Sr. VP, HR*	1.5B	10,000	*Electronics, telecom & industrial products*
Ritz-Carlton Hotel Co., The *Atlanta*	Bruce Speckhals *Vice President, IS*	Leonardo Inghilleri *Sr. VP, HR*	N/A	14,000	*Hotel management*
Saturn Corp. *Troy, Mich.*	Wes Arrington *EDS Information Systems*	Tim Epps *Sr. VP., HR*	N/A	8,800	*Automobile manufacturer*
Starbucks Coffee Co. *Seattle*	Carol Eastin *Sr. Vice President, MIS*	Sharon Elliott *Sr. VP, HR*	285M	9,000	*Roaster & retailer of specialty coffee*
Texas Instruments Inc. *Dallas*	Jodie Ray *Mgr., Info. Sys. & Svcs.*	Mark Hillman *Mgr., Corporate Business Sys.*	10.3B	56,000	*Electronics*

tell us that they can perform better in their jobs," says Tucker.

At **Saturn Corp.**'s Spring Hill, Tenn., manufacturing facility, employees undergo 92 hours of training every year. Pay levels are tied to completing courses, not only for individual employees but also for teams as a whole. "There's a big push on the part of the team to make sure that everyone meets their training goal and is moving in the same direction," says People Systems Team Leader Joy Rodes.

In addition to training employees to meet current needs, many CIO-100 companies are equipping their employees with skills for the future. As a result, HR practices promote career development with tools, such as CD-ROM-based testing programs, to assess career skills, give guidance in terms of succession planning and encourage employees to get the skills required to remain employable in the future. "Just as we talk about continuous improvement in a total quality manufacturing sense, we have to extend that kind of thinking to human resources," says Starbucks' Elliott. "The company is nothing without its people, and the HR function has to be responsible for developing near- and long-term people strategies."

As part of Starbucks' career-assessment and -development programs, the company regularly keeps employees up-to-date on corporate strategy and growth. The idea, according to Elliott, is to let individual employees know where the company is heading and how strategic plans affect their departments and their jobs. "We want to allow our employees to make well-informed decisions about whether their jobs in the future will be in line with what they want to be doing," Elliott says.

Information technology can help achieve a synergy between company goals and practices. **Texas Instruments** uses a PC-based program developed to recruit college students. The interactive disk program helps match an applicant's skills with positions available at TI and provides feedback on individual job-searching techniques. At campuses where TI recruits, the quantity of sign-up lists for interviews is "incredible," according to Ed Johnson, one of TI's fair-employment-practices managers. Qualified and interested students who may not have been able to schedule an interview in the past are now more likely to see a TI recruiter because other nonqualified students often screen themselves out after using the program.

"We're also planning to replace our 50 HR legacy systems with one integrated system from PeopleSoft," says Doug Heard, manager of human resources reengineering at TI. "Employee status and recruitment information is a good hook into training, and we'd like to have that data available in a client/server-based architecture because it will support our overall strategies."

GTE maintains a mix of HR systems, largely due to the company's tradition of growing through acquisition. To facilitate global expansion, the company needs a consistent approach to international HR. MacDonald says it is essen-

Resume

ALONG THE BLACKTOPPED *speedway of Indianapolis, the pressures of competing at 200 miles per hour exert inhuman force. Gravity punishes drivers with a 12-pound hand. And in the pit, laptop computers now determine wing angles on cars called simply "rocket machines."*

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tial for GTE to have an enterprisewide system that provides management with an accurate picture of the skills of GTE's worldwide workforce. "In order to be effective, any integrated system would have to be accessible by employees, simple to use, comprehensive, and have confidential and secure information," says MacDonald.

At UCS, IT services is organized into nine job families, each with several skill levels. After interviewing IS professionals throughout the company about the direction of systems development, the data gathered was matched up with defined skill levels. "Out of this process we created training paths for each of the families," says Al Halfacre, who manages the information technology institute under the aegis of Universal Card University. "We show each individual's track of knowledge to the employee and the skill sets that are needed to demonstrate or obtain in order to promote their careers throughout the company," he says. UCS applies similar tracking and progression training for its customer service employees as well.

Employees at Federal Express can apply for jobs online through the company's Human Resources Information System (HRIS), called PRISM. If, for example, a courier from Miami wants to move to California, she can access PRISM from a desktop computer and look at all the job postings based in the Golden State. She can then apply for one of the jobs and will be ranked according to her qualifications and tenure at the company. If the candidate is not hired, PRISM informs her of who landed the job and why she was passed over. The system also informs the candidate of what additional training is necessary in order to get the job. Says Jim Candler, FedEx's managing director of personnel information systems, "Employees can audit the entire process. They may disagree with the job qualifications, but they always know where they stand in the process and why decisions were made."

"The company is nothing without its people, and the HR function has to be responsible for developing near- and long-term people strategies."

-Sharon Elliott

At Ames Rubber, turnover rates reached 80 percent a few years ago. To combat the problem, managers enlisted employees to help define qualifications for new hires. The process that resulted is something Ames refers to as "reverse benchmarking." Ames looked at people who had left the company within a year of being hired and developed a profile of characteristics that the company and the employees didn't want. The desired qualities employees suggested—flexibility, reliability and customer orientation—were also incorporated in an interview form.

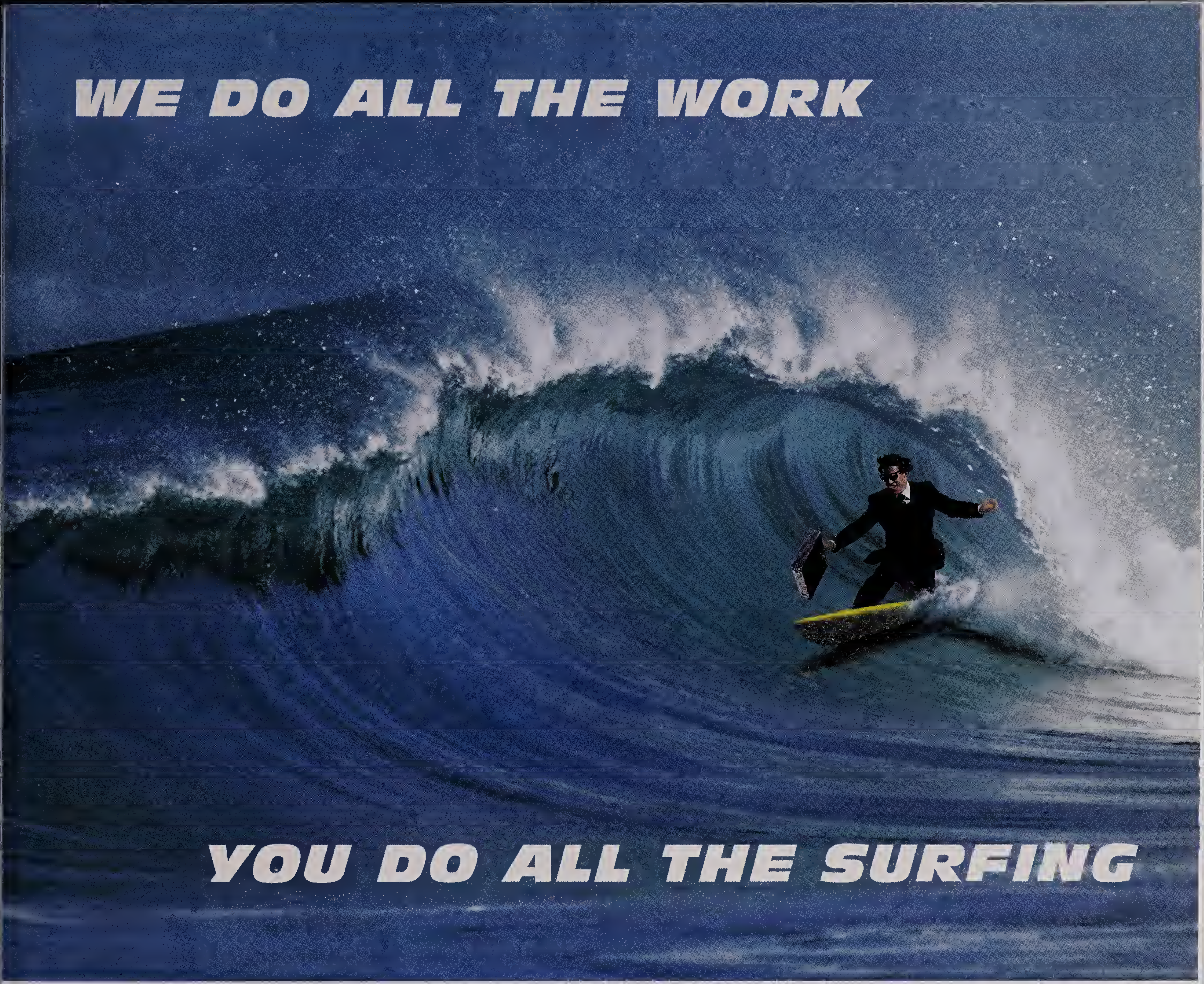
"Employees have taken on some of the traditional functions HR used to handle, such as defining hiring requirements and providing performance feedback to new hires," says Robert Kenna, director of human resources. As a result, enthusiasm among employees is markedly improved and turnover has decreased to 7 percent in the last two to three years. And the quality of products has improved. Product defect rates have plummeted from 34,000 parts per million to only 52.

Eager to encourage employees' personal and professional growth, many CIO-100 companies are also proponents of career development programs that are geared toward taking advantage of an individual's interests and potential. According to UCS's Walter, many companies are lacking a distinct road map outlining career opportunities for employees. At UCS, employees and managers sit down together to devise individualized learning plans on which they both agree. Often, employees can offload their regular responsibilities while they are in training. "The whole process," says Walter, "has to be a shared responsibility."

Employees can be given the opportunity to plan far more than their own careers. Through practices that promote empowerment, they can handle the kinds of tasks once performed only by managers. At **Merck Sharpe & Dohme**'s pharmaceuticals manufacturing facility, teams of employees are in charge of the entire production process, from maintaining machines to performing quality audits on finished products. "We have an open-door policy, so operators can talk directly to the plant manager if they have any problems," says Dora Soler, senior human resources administrator. "They can even enter data themselves in our sophisticated MRP II manufacturing systems."

With recent revenue growth about 62 percent annually, Starbucks is preoccupied with installing basic operational technology such as point-of-sale systems. Over the next several years, however, Starbucks plans to provide employees with computer-based career management, training and succession planning tools so that they can identify where they can move in the organization. Elliott anticipates some components of an integrated corporatewide system will be implemented over the next 12 to 36 months. She envisions employees dispersed across the country using laptops to enroll in progressive pay programs or manage flexible work schedules. Plans also call for establishing an integrated HR technology infrastructure throughout the company that will promote self-sufficiency among employees. Says Elliott, "If we're not able to manage information about our employees in a nanosecond, HR will become a serious impediment to the business."

With traditional employment safeguards dwindling, HR practices have taken on a new pragmatic approach. Even at stalwart firms such as GTE and **Mobil**, downsizing has taken its toll on the ranks of management. In a future without security, the best a company can do for its employees'—and its own—well-being is to provide them with the skills to make them continually employable and adaptable to a rapidly changing landscape.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THE LEARNING COMPANY

Raychem supports career development as well as product development

BY MEGAN SANTOSUS

IF IT'S SEXY PRODUCTS YOU'RE LOOKING FOR, you won't find them at Raychem Corp. The Menlo Park, Calif.-based materials-science and engineering company manufactures the circuit-protection devices, leak-detection systems, heat-shrinkable tubing and insulation that go into everyday items like telephones, computers and water pipes. But if its products aren't sexy, its numbers sure are. Raychem holds more than 900 U.S. and 3,000 foreign patents and has grown steadily since its founding in 1957—to $1.5 billion in annual sales in 1994.

Raychem keeps those numbers sizzling by staying on the cutting edge of technology. The pace of change in materials-science technology—and the skills base necessary to keep up with it—is accelerating at breakneck speed. In a business where staying alive means staying ahead, creativity is a constant, innovation a must.

STEPHEN BALOGH *(left) and* **MARTIN WEGENSTEIN** *encourage a culture of creativity at Raychem Corp.*

PHOTO BY ED CALDWELL

To encourage the kind of culture necessary to foster creative thinking among its employees, Raychem management keeps bureaucracy to a minimum and gives researchers the support they need to succeed. The company commits an average of 7 percent of revenues each year to research and development funding, which, according to Raychem, ranks it among the top 100 U.S. companies in R&D spending.

But the smartest companies know that innovation does not live by R&D spending alone. For a company such as Raychem that thrives on the collective knowledge of its employees, career stagnation can mean disaster. So, in addition to supporting product development, Raychem's culture of creativity also encourages employee development.

Devising the kinds of policies that both meet the needs of the organization and satisfy the interests and ambitions of its individuals, however, is a tough business. At many companies, talk about training and career development can be cheap. It's tempting to keep good performers in the same kinds of jobs year after year. That kind of pigeonholing can cause boredom, frustration and burnout, leading even the most loyal employee to pound the pavement in search of a better job elsewhere. The challenge for management comes in backing up its good intentions with actions that employees will eagerly embrace.

At Raychem, such actions include the creation of a career center. Located at Raychem's Menlo Park headquarters, the career center offers employees career-related information and guidance and serves as a visible reminder that management values the concept of continuous education. "Our CEO has declared that learning is mandatory," says Stephen A. Balogh, vice president of human resources. "Employees can't assume that their college degree or the last class they took is good enough."

According to center manager Linda Proulx, putting materials on everything from continuing education programs, college catalogs and job interview techniques in one place removed a lot of the anxiety people might have felt at the thought of visiting such a center. After all, most people don't want to advertise the fact that they may be interested in another job, even if it is within the same company. "Some people come in here because they are looking for another position within Raychem, while others want to take advantage of our tuition reimbursement policy or

How Frito-Lay Handles the Decision Making CRUNCH

With Its Zone Workbench System Created With SAS Institute Software

Doritos® and Tostitos brand Tortilla Chips, Lay's® and Ruffles® brand Potato Chips, and Rold Gold brand Pretzels

It's hard to imagine any company that understands consumer tastes better than Frito-Lay, a leader in the U.S. salty snack category with annual revenues of more than $5 billion. Yet Frito-Lay is determined to get even closer to its 400,000 retail customers.

In fact, a decentralization effort begun in 1990 has, in the last five years, brought a renewed sense of ownership and empowerment to the 30,000 Frito-Lay employees. As part of this ownership, Frito-Lay's Information/Technology Systems department (I/TS) has created a tactical, market-driven decision support system—the Zone Workbench System—designed to get timely information in the hands of front-line managers.

It's an application built from the customer up, and the SAS® System of software has been there every step of the way.

"The Zone Manager is the first line of communication with our Route Sales force," says Tom Nealon, Director of I/TS for Frito-Lay, whose department spearheaded development of the decision support system. "We knew from the start that the Zone Workbench had to provide information that was 'actionable'. It also had to be portable across client/server, workstation, or laptop environments. Equally important was the ability to integrate multiple data sources."

Delivering More than Software Alone

"Given the tight schedule, the software company we chose had to provide superior applications development tools—as well as comprehensive training, consulting services, and documentation," adds Nealon. "SAS Institute came through on every count, proving time and again the value of having a software vendor that's as interested as we are in completing projects on time and on target."

Nealon calls the Zone Workbench "a tremendously versatile business tool proving user-friendliness, power, and portability between platforms can all operate in one package. The old-style EIS systems are antiques. The game today is to provide information that can impact the marketplace each day, for each of our customers. For Frito-Lay, SAS Institute is making sure we have the tools to make an impact."

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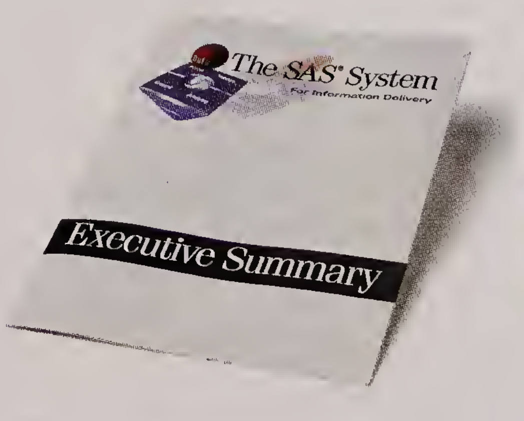

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IN PROFILE

Company: *Raychem Corp., Menlo Park, Calif.*
Annual Revenues: *$1.5 billion*
Number of Employees: *10,000*
Principal Line of Business: *Electronics, telecommunications and industrial products*
Best Practice: *Career development*
Enabling Technologies: *Plan integrated HRIS and CD-ROM and multimedia-based learning tools*

check out a book," Proulx says. Another reason why the center is so successful (according to Proulx, there were 1,200 "customer contacts" in a recent quarter among the 3,000 employees at Raychem's headquarters) is that it's staffed by knowledgeable counselors with good communication and interpersonal skills. "Most people don't know what they're looking for, so staffing the center appropriately is very important," she says.

One of the career center's most innovative resources is Raychem Insiders—a database system listing 300 employees who have volunteered to share information about their jobs and careers. The system serves as both an internal informational interview network and a way for employees to hook up with people in similar positions. More technology is in the works; the center is now in the process of evaluating CD-ROM and multimedia-based learning tools. "Self-paced learning tools can reinforce what people learn, although it's difficult to say if it can completely replace traditional training," says Proulx. The center includes two "learning pods," each consisting of a computer with an Internet connection as well as a series of career-related software programs to facilitate self-assessment and job development.

The career center is just one of the tangible things Raychem is doing to promote career development. Others include formal workshops offered through Raychem University, the company's internal training and development organization, on such topics as resume writing, coaching techniques, career planning, self-assessment and identifying best skills.

Career development for every worker at Raychem "is the joint responsibility of managers and employees alike," says Balogh. Managers are required to articulate to employees the skills necessary to fulfill business needs; employees are expected to be self-reliant and proactive in pursuing new skills and interests. "We're trying to align employee feedback and coordinate staffing needs with the overall direction the business is moving in," he adds.

Such alignment will be easier to achieve once Raychem completes a planned migration from a mainframe- to a client/server-based environment. For the time being, an integrated human resources information system (HRIS) is on hold because Raychem has more pressing needs for systems to support supply chain management and manufacturing, according to Balogh. But once HR can take advantage of a client/server-based architecture, both Balogh and Proulx believe that information technology will be an integral part of Raychem's HR management processes. With an integrated architecture in place, Raychem managers will be able to instantly access detailed information about its worldwide workforce and be in a better position to help employees create career paths that are aligned with organizational needs. For a company that lives by the knowledge of its people, that is a critical capability.

With more than half of Raychem's employees located in 40 countries, Balogh is working with the IS department to implement a technology infrastructure that will provide the same kinds of career development programs worldwide. "We want to give our managers a better view of the talent within the company," states Balogh.

Martin W. Wegenstein, Raychem's vice president of information technology and CIO, anticipates that a client/server-based worldwide HRIS will be in place within the next few years, providing Raychem managers with comprehensive data about their employees. In addition, an enterprisewide HRIS will streamline some administrative tasks such as approving vacations, pay raises and tuition reimbursements. Balogh also sees the what-if modeling capabilities of computers helping to improve how managers plan payroll. Raychem is currently developing a career management and self-assessment program that can be delivered via a network or sent to individuals on disks.

Right now, Wegenstein and Balogh are evaluating their current HR systems capabilities in light of the company's ongoing globalization efforts. "We're in a fairly traditional visioning process," says Wegenstein. "We envision where we want to be, figure out the gaps in our existing systems and then do a cost/benefit analysis."

Raychem currently uses financial systems from SAP, and Wegenstein reports that he and his staff plan to expand the package into the operational side of the company to support such areas as supply chain management and HR. SAP has an HRIS package that could be easily integrated to its the finance and manufacturing systems, says Wegenstein.

While information technology provides an essential building block for establishing cohesive HR management practices throughout the company, it is no substitute for developing the potential of each employee. "We're looking to implement technology to improve people-to-people communication," says Wegenstein. "The key element to our approach is that it's broad-based, beginning with a solid voice network, voice mail communications, video capability, e-mail and some kind of groupware technology." With improved communications and groupware, employees will have a much better idea what's going on in other parts of the company and can pursue interests in areas about which they might not otherwise have any information or knowledge.

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THE WORLD

Political change and blurring borders are requiring that companies doing business abroad adopt a global mindset. For this year's CIO-100 winners, success has meant some combination of strategic thinking and IT.

BY ANNE STUART

AT GILLETTE, "WORLD CLASS" IS MORE THAN a lofty slogan. The venerable manufacturer's growth plans rely as much on steady international expansion as they do on developing new razors, toiletries and toothbrushes. "One of the mission statements of the company is to be the overall global leader in the product categories we've chosen to compete in," says Patrick J. Zilvitis, vice president for corporate IT. "To do that, we have to be the number-one company in every country we choose to compete in."

And to do *that*, Gillette—like many of the other globalizing companies honored in this year's CIO-100—has developed a variety of business and technology practices intended to fuel its growth. For Gillette, it's a double-edged strategy. First, the company, which manufactures its products in 28 countries and sells them in 200, strives for a consistent global approach. "Globalization, to us, is the ability to operate at the same quality level and efficiency level in any plant in the world," Zilvitis says.

At the same time, the Boston-based company wants the inside track in all its foreign locations. "We want to establish Gillette as a local company, not just a U.S. company," Zilvitis says. Translation: Gillette, like many other giant worldwide organizations, wants to fit into the local culture everywhere it does business.

Like many of this year's other CIO-100 companies, Gillette has done business internationally for years. But never has a clear globalization strategy been more important than today, as the business community moves toward what's been called "the end of geography." Sweeping political change has opened new markets in China, Vietnam, Mexico, the former Soviet Union, Eastern Europe and elsewhere; trade agreements have further blurred the borders.

CIO-100 companies honored for their best practices in global operations range from a new age British cosmetic retailer to the granddaddy of all fast-food chains, based

CIO 100

Best Global Operations Practices

CLASS

solidly in America's heartland. But when it comes to globalization, many tend to adopt one of two approaches: Think globally and act globally, or think globally and act locally.

Some organizations, such as **McDonald's, Dell Computer** and **Benetton,** primarily strive for a global approach by plugging new markets into a cohesive worldwide operation. Others, including **Ford, Whirlpool** and the **American International Group**, adapt products, services or marketing to each new region or location. And some, such as Gillette and the **Radisson** hotel chain (see related story, Page 84), develop some combination of the two.

Chicago-based consultant Gary A. Curtis, a CIO-100 judge, calls IT the cornerstone for constructing a global enterprise. "If it's not working well, you're going to be in trouble in global expansion," says Curtis, vice president and director of the worldwide IT practice for the Boston Consulting Group Inc. "Any flaw or shortcoming in it is going to be greatly magnified in international expansion. You lose the luxury of having your systems tied together in a relatively compact number of time zones and geography."

For companies taking primarily the "think globally, act globally" approach, both business and IT practices must be consistent worldwide. Among the firms working toward that end is McDonald's, which strives to be nothing less than the dependable and convenient eatery of choice in as many countries as possible.

"We're extremely strongly oriented toward opening a consistent restaurant with a consistent menu and keeping our brand identity the same everywhere in the world," says Carl Dill, senior vice president of IS. The company wants customers to walk into a McDonald's in, say, Rothenburg, Germany, expecting pretty much the same food and service as they'd get in Lansing, Mich.

To accomplish that, the Oak Brook, Ill.-based fast-food giant has established a global infrastructure that lets new sites begin operations almost immediately, saving time and money. Once McDonald's finishes constructing the average restaurant, it takes less than a day to load and deploy a standardized electronic cash register and customer interface system. Even advanced management systems in stores serving as regional administration centers can be brought online in two or three days.

"We plug them in right away so you're not having to set up a new office or restaurant and all the technology to support it [with every store opening]," Dill says. "That's something we feel is a best practice worldwide, some-

ILLUSTRATION BY JEFF BRICE

CIO 100 GLOBAL OPERATIONS WINNERS ...

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
American Honda Motor Co. Inc. *Torrance, Calif.*	Thomas Ross *VP, IS Division*	N/A	38B	2,500	*Automobiles, power equipment, motorcycles*
American International Group Inc. *New York*	Lawrence W. English *Sr. VP, Admin.*	N/A	22.4B	32,000	*Diversified financial services*
Asea Brown Boveri Ltd. (ABB) *Zurich, Switzerland*	Jean A. Egan *Managing Dir., Info. Mgmt. Svs. (ABB Inc.)*	Robert E. Donovan *President & CEO (ABB Inc.)*	29.7B	207,000	*Mfr. of equip. for power generation, trans. and distrib.*
Benetton Group SpA *Ponzano, Treviso, Italy*	Bruno Zuccaro *Dir. of Info. Systems*	Giovanni Cantagalli *COO, Intl. Businesses*	2.8B lira	6,000	*Apparel*
Body Shop International PLC, The *West Sussex, England*	Tony Adderley *Corporate IT Mgr.*	Terry Hartin *Dir. of Global Ops.*	293.1M	2,823	*Specialty retailer of cosmetics products*
Citicorp *New York*	Colin Crook *Sr. Technology Officer*	N/A	255B*	80,000	*Financial services*
Coca-Cola Co., The *Atlanta*	Hugh H. Switzer *VP & Director, Info. Svcs. Div.*	John Hunter *President, Intl. Bus. Sector*	16.2B	33,000	*Beverages*
Dell Computer Corp. *Austin, Texas*	Tom Meredith *CFO and Acting CIO*	N/A	3.5B	7,000	*Manufacturer of computers*
Ford Motor Co. *Dearborn, Mich.*	Charlie Szuluk *VP, Process Leadership*	Edward Hagenlocker *Exec. VP—Pres., Ford Auto. Ops.*	128.4B	338,000	*Automobile manufacturer*

Legend: Revenues $ Employees 👤 *Assets

continued on page 80

thing that gives us a distinct competitive advantage."

McDonald's uses standard financial systems on PCs for small markets and IBM AS/400s for larger markets. A Hewlett-Packard client/server-based information warehouse, available to all McDonald's facilities worldwide, collects standard store data for both local managers and corporate headquarters. Dill says the key to McDonald's global network is maintaining common vendor contracts with IBM and Hewlett-Packard and standardizing procedures worldwide.

Through cash register programming, managers anywhere can schedule the Saturday night crew, determine the number of patrons served during the lunch rush or check inventory to make sure they've got enough sesame seed buns. When ordering supplies, all stores use a global system, requesting items by number rather than name, so that although different suppliers ultimately fill the orders, Dill says, "everyone can count on the cheese for the cheeseburgers being the same all over the world."

Training is also standardized. Every McDonald's manager attends "Hamburger U." in England, Japan or the United States; other employees learn from videotapes—identical except for the language—how to run the drive-up window or prepare an order. "The procedures people see to cook meat or french fries are the same throughout the world," Dill says.

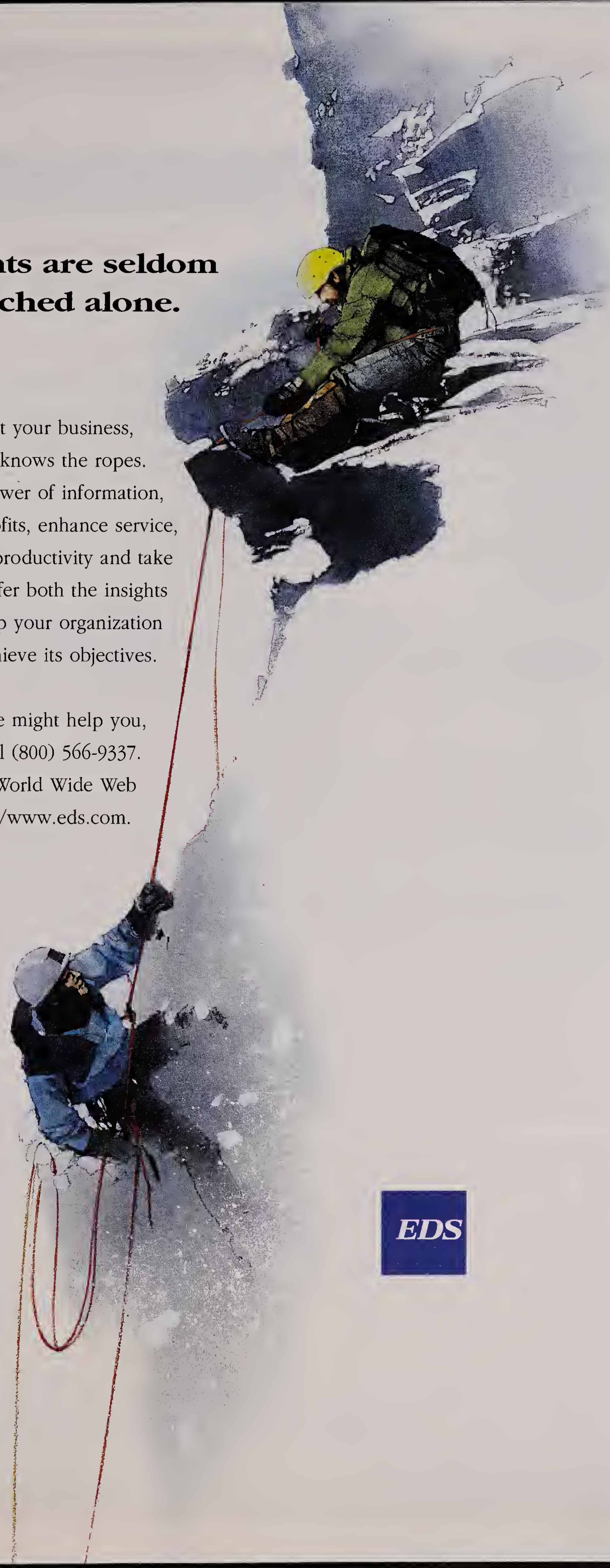
Part of McDonald's mission is keeping prices low, so it also uses a global purchasing system with a database that tracks shipping costs and other factors, then helps the firm locate alternate sources if one supplier's prices soar.

Benetton, the giant clothing concern, also standardizes many of its operations worldwide. While the Italian company's stores are as ubiquitous in malls as the Gap and Thom McAn, Benetton doesn't actually sell garments. Instead, it distributes its colorful sportswear through licensed retailers, usually local entrepreneurs. The company also relies on a tightly knit network of a dozen major suppliers producing apparel under the Benetton name in Europe, South America, Africa and Asia.

"Each [supplier] company is independent," explains Bruno Zuccaro, the company's director of IS, "but each has to respect the common rules, the group rules." For instance, he says, all use the same IBM AS/400 computer system, common merchandise coding and identical practices for contacting 7,000 retailers in 110 countries. "All the information to the shop has to be consistent," Zuccaro says. "If you are a shop owner, you don't want to receive 12 different invoices with 12 different layouts."

To handle accounting, ordering and distribution, many companies open branch offices in every country. Benetton doesn't. "By doing that, you slow down your business," says Zuccaro, who is based at company headquarters in Treviso, Italy. "We have the ability to collect the orders from here, distribute from the central warehouse, invoice and bill from here. We are very rapid, very reactive. At the same time, we have a very good control of the business everywhere in the world."

Because fashion is fickle, about 800 Benetton repre-



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CIO 100 GLOBAL OPERATIONS WINNERS

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
Gillette Company, The *Boston*	Patrick J. Zilvitis *VP, Corporate IT*	Michael C. Hawley *President & COO*	6.1M	32,800	*Manufacturer of personal-care products*
KFC (PepsiCo Restaurants International, Asia) *Wanchai, Hong Kong*	Simone Wong *MIS Manager*	Sam Su *VP., North Asia, PepsiCo Restaurants*	2.5B	70,000	*Restaurants*
McDonald's Corp. *Oak Brook, Ill.*	Carl Dill *Sr. VP of IS*	Thomas Glasgow *Exec. VP & COO*	26B	500,000	*Quick-service restaurants*
Mondex Natwest Bank PLC *London*	Brian Push *Sr. Security Manager*	Matthew Piasecki *Head of Global Sales*	N/A	150	*Electronic cash-payment systems*
Nestlé S.A. *Vevey, Switzerland*	Jean-Claude Dispaux *Sr. Vice President*	N/A	43B	212,000	*Food and beverages*
Otis Elevator Co. *Farmington, Conn.*	Kent Brittan *Vice President, Finance*	Jean-Pierre van Rooy *President*	4.6B	66,000	*Mfr. of elevators & escalators*
Radisson Hospitality Worldwide *Minneapolis*	Scott Heintzeman *VP of Info. & World. Res. Svcs.*	John A. Norlander *President*	3.4B	64,000	*Hotel franchising, management*
Shell Oil Co. *Houston*	N/A	N/A	N/A	N/A	*Petroleum refining and natural gas*
Whirlpool Corp. *Benton Harbor, Mich.*	Ronald L. Kerber *Chief Technology Officer*	N/A	8.1B	39,000	*Major home appliance mfr. & mktr.*

sentatives worldwide monitor retail sales. They report trends back to Treviso, where officials can quickly notify suppliers to, say, step up production of turquoise pullovers or pull the plug on chartreuse cardigans.

At Dell Computer, officials rely on one worldwide business model with two variations, says Michele Moore, spokeswoman for the Austin, Texas-based computer maker that built its reputation on mail-order sales. In some smaller markets, Dell still does business by mail. But the company now reaps 90 percent of its revenues from business-to-business sales by field teams or telephone sales. "We've leveraged the fact that we do operate similarly in these foreign markets," Moore says.

Companies such as McDonald's, Dell and Benetton choose the "think globally, act globally" approach because their corporate goals call for offering a consistent, instantly recognizable product or service worldwide. But others opt to "think globally and act locally" because they know their businesses will only succeed if they figure out what locals want and then deliver it.

For instance, appliance manufacturer Whirlpool, strictly a North American company for much of this century, began aggressive global expansion in the mid-1980s. (See "Forging a Global Appliance," *CIO*, May 1, 1995.) But as Dan Miller, executive vice president for Whirlpool's Latin American appliance group operation, notes, "If we're going to become a global company, that means much more than planting flags in different countries." Instead, he says, the Benton Harbor, Mich.-based corporation must leverage its presence in any foreign nation it enters.

As part of that strategy, Whirlpool will soon begin manufacturing its appliances' "hearts and lungs" the same way worldwide, but varying product design widely from country to country, much as Ford—another CIO-100 winner—did with its Mondeo "world car." "Styling and features and functions will be tailored to the market," says Dan McNicholl, vice president of IS. To better coordinate that effort, Whirlpool has streamlined systems and standardized applications wherever possible. For instance, the company moved to a common PC-based e-mail program worldwide, established a single computer-aided design system and reduced the army of separate order-processing systems that had built up through acquisitions around the globe.

Whirlpool's reconfigured approach requires understanding what the local buyer wants. Whirlpool launched a "consumer-to-consumer," or C2C, program, which reminds the company "that we need to make the customer the focus of what we do rather than looking internally or comparing ourselves to others," Miller explains. Through extensive research, Whirlpool also began customizing products long before entering new markets. For instance, it had long believed that Asian consumers would be more likely to buy old-fashioned two-tub washers than more expensive modern models, which wash and spin in the same tub. But research indicated that even consumers currently doing laundry by hand preferred to wait until they could afford a single-tub washer.

American International Group (AIG) also prides itself on knowing its customers. Founded in 1919 by an Ameri-

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can in Shanghai, China, AIG later moved to New York but recently resumed doing business in China for the first time in four decades. The firm, which had revenues of $22.4 billion worldwide last year, also became the first foreign insurer allowed to set up shop in Pakistan and Romania.

"Our approach in entering or re-entering a market like that is to be very close to the customer, the local market," says Lawrence W. English, senior vice president of administration, AIG. "We rely heavily on local national management." In China, the company realized local residents might be reluctant to purchase costly life insurance from Americans, so it hired and trained 4,000 Chinese nationals to sell the policies.

> **"No one can do a better job at becoming local than the locals."**
>
> *–Bo-Goran Persson*

Chinese agents developed sales techniques tailored to their own culture. For instance, they target parents, especially women, anxious to provide the best for the lone offspring they've had under China's one-child policy. They drop in on companies, sell the first policy to the manager, then work on lower-level employees anxious to follow the boss's lead. The pitch must work: The Chinese sales force sells upwards of 26,000 policies a month.

Some companies strive for an equal balance of local and expatriate management, at least in the beginning, until they make sure the corporate culture translates or adapts to the local one. Dell, for instance, transfers some home-team folks and hires some nationals whenever it enters a new market. "Obviously, you need both people who understand our business and people who understand the region," says Thomas L. Thomas, who was CIO for the firm until June 1995, when he resigned following a reorganization of the IS department.

Asea Brown Boveri, a highly decentralized manufacturer of equipment for power generation and transmission, takes a similar approach. Typically, the Zurich, Switzerland-based company sends expatriates into a new market to hire and train local employees in ABB culture and practices. But they move on or return home in three years, turning the job over to the local people they've hired and trained.

"No one can do a better job at becoming local than the locals," says Bo-Goran Persson, president of ABB Power Transformers Management GmbH in Mannheim, Germany. "They understand the customer, they speak the same language, they're in the same time zone." Training is so standardized, he says, that the trained employees could then serve as expatriates in another ABB location. Persson and other ABB executives credit the company's central-reporting system, Lotus Notes, fax machines and laptop computers with helping standardize the corporate culture worldwide. Like Whirlpool, ABB has also tried to reduce redundant applications worldwide.

Sometimes globalization requires an enterprisewide makeover. For example, on Jan. 1, 1995, Ford launched the most dramatic restructuring in its 92-year history. Dubbed "Ford 2000," the ongoing effort reorganizes the world's second-largest automaker under a model of centralized strategic leadership and decentralized implementation.

The plan scrapped Ford's geographically oriented organization by merging its European and American operations, with the Asia-Pacific, African and South American operations to be folded in later. Then the company restructured itself by product lines, creating five global vehicle centers, four at its Dearborn, Mich., headquarters and one in England. Each center designs, develops and engineers its assigned cars and trucks for individual markets.

Going global was the last thing on Anita Roddick's mind when she opened her first cosmetics and toiletries store in Brighton, England, in 1976. "It was a question of needing a livelihood to feed the kids," recalls Roddick, now CEO of **The Body Shop International**. But as word spread about her innovative products and social-activist approach to business, the company expanded into Europe, Australia, the Middle East, North America and Japan. Today, the 1,200-store operation trades in 45 countries and 23 languages.

As the chain grew, Roddick found she needed to ensure that far-flung franchisees honored not only the chain's business practices but its "profit with principles" message as well. She created a "trading charter" promising to avoid wasteful packaging and animal testing of cosmetic products and to support environmental and human rights causes. Among other things, The Body Shop instituted "social auditing," a rigorous ongoing examination by independent auditors to make sure the company lives up to its promises. For instance, an environmental auditor regularly visits the company's headquarters to examine documents, interview employees and test wastewater samples; findings appear in The Body Shop's annual report. The company also uses a database to carefully monitor its suppliers to make sure all ingredients live up to the chain's claims and audits its franchisees to make sure they live up to them too. The company is developing an enterprisewide system to encompass all areas of this process.

Whichever business strategy they use, globalizing companies agree on one critical factor: the need to stay in touch. As they cross one border after another, this year's CIO-100 winners rely more and more on communicating by technologies that transcend time, such as e-mail, voice mail and fax. Many also make heavy use of videoconferencing and groupware.

At the same time, many executives continue to crisscross the globe, visiting franchises and factories, and many managers expect to meet their peers from foreign countries once or twice a year to talk about successes and problems. As ABB's Persson puts it: "In spite of all this technology, there is nothing that can replace meeting with people. When you sit in the room with the group, you can see their reactions, see whether they're nervous or confident. You can't get this from Lotus Notes."

"In skating over thin ice, our safety is in our speed."
– Ralph Waldo Emerson

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GUEST PRACTICES

By thinking globally and acting locally, Radisson has become one of the world's fastest-growing hotel chains

BY ANNE STUART

GLOBAL BRAND, LOCAL DELIVERY. MORE THAN anything else, that four-word phrase sums up the philosophy behind every business practice the Radisson Hotel chain uses in its quest to become the world's leading chain of hotels.

The Minneapolis-based organization, a subsidiary of the giant Carlson Hospitality Group, is already a top contender for the title of fastest-growing hotel company. Radisson, which maintains 76,640 hotel rooms in more than 300 facilities in 39 countries, opens a new location about once every 10 days, half of them in foreign countries. That's a big jump from 1983, when the company operated just 25 hotels, primarily in the midwestern United States.

Reflecting its increasing commitment to globalization, the company changed its name in May 1995 to Radisson Hospitality Worldwide. Since 1991, Radisson has opened the first U.S. hotels in Moscow and the former East Berlin, doubled its presence in Mexico and added its name to 35 properties in key cities in Europe, the Middle East and China through a partnership with the Belgium-based SAS International hotel chain, now called Radisson SAS Hotels. The company expects to open a hotel in Hanoi next year, and plans call for rapid expansion in the Asia/Pacific region, the Caribbean, Latin America, Australia and Canada.

In going global, Radisson has exercised a simple strategy: building a world-class reputation for quality and service while adapting to local markets—or, put another way, becoming a global brand with local delivery.

"What we have tried to do for the last 12 to 15 years is to create business structure and business disciplines that help us do that," says Radisson President John A. Norlander. Above all, he says, Radisson structured its hotel organization on what executives call "the triangle of excellence," balancing the interests of guests, employees and franchise owners. The reasoning goes like this: If offered training and career opportunities, employees anywhere will provide high-quality service to guests, ensuring repeat business and referrals that, in turn, lead to higher revenues for franchisees and the parent firm.

Radisson has launched several practices to translate the excellence philosophy into reality. Key among them is "Yes, I Can!"—an intensive worldwide program that trains front-line employees to consistently exceed guest expectations. "We are in the service business, and 'Yes, I Can!' generates that message to employees," Norlander says.

That sounds pretty basic. But, as Radisson officials learned while expanding into far-flung new markets, that cheerful Middle American "can-do" attitude doesn't necessarily come naturally in other parts of the world. For instance, as Radisson moved into Moscow, advisers warned that it might be difficult to re-create the chain's assertively helpful atmosphere there because workers from the former Soviet Union are accustomed to provid-

JOHN NORLANDER *(left) and* **SCOTT HEINTZEMAN:** *Part of Radisson's global strategy is adapting to local markets.*

PHOTO BY STEVE WOIT

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ing and receiving uneven, lackluster service. Or, as Norlander says, the company needed to find employees who could "think in terms of 'Yes, I Can!' instead of 'Nyet, I Can't.'"

To accomplish that, Radisson used an unorthodox method to recruit Russian nationals firmly rooted in their own culture but able to adapt their style to provide the company's trademark friendly, personal service.

"We ran ads in local papers saying, 'If you like to smile and you want to work with people, come talk to us,'" Norlander recalls. That wouldn't be a bold strategy in the United States, where similar ads fill the help-wanted sections of most major newspapers. But it was a rarity in Russia, especially because the ads were published in English.

Even then, Radisson had to teach the Russians to relax. "We brought them in for classes where, among other things, they were taught to smile," Norlander recalls of the company's first 50 staffers in Moscow.

IN PROFILE

Company: *Radisson Hospitality Worldwide, Minneapolis*

Annual Revenues: *$3.4 billion in 1994*

Number of Employees: *64,000 worldwide*

Principal Line of Business: *Hotel franchising, management, cruises*

Best Practices: *Local partnerships; "global brand, local delivery" approach; "Yes, I Can!" customer service program; "Look to Book" partnership with travel industry; centralized telephone reservation center; standardized guest records and other property-management functions worldwide.*

Enabling Technologies: *Reservation center: Open Unix, client/server and ASCII terminals on TCP/IP Novell Ethernet LAN with frame relay WAN links to other sites; 4GL and C-based large-scale transaction processing; Sybase/PowerBuilder relational databases. Property management: PC network running Novell 3.12 duplexed SCSI drives on Compaq ProSignia and ProLiant servers, HP Laser printers, Cisco 2501 routers.*

That incident illustrates Radisson's dilemma in entering any new market: The company must seamlessly meet Western expectations for quality and service while adapting to local culture or striking a compromise with it. In Moscow, the company met that challenge with the practice of appointing two-person teams to head every department, from the general manager's office to catering to housekeeping. Teams consist of an expatriate American who understands the Radisson way of doing things and a Russian national who speaks the language, knows the culture and will eventually inherit the job.

Information technology plays a key role in fueling Radisson's worldwide expansion. Within the next few years, all hotels will use a single hotel-management system known as Harmony, which includes a database with profiles on every guest at every Radisson property. Harmony carries out the "global brand, local delivery" theme by standardizing the reservation processes worldwide. Because of their profiles, customers can provide room preferences, credit card numbers and other information just once, and anytime they check in at a Radisson hotel anywhere, the local staff has enough information to treat them like frequent guests. The system also provides a seamless two-way interface between every hotel's front desk and travel-agent reservation systems all over the world.

Harmony also allows hotels to communicate easily with Pierre, the company's global high-speed reservations system that, like the chain itself, is named for the 17th century French explorer and trader Pierre Esprit Radisson. To better accommodate a global customer base, Pierre's worldwide reservations center in Omaha, Neb., accepts toll-free calls 24 hours a day. Many of its 250 sales staffers speak fluent Spanish, French, Italian or German. Company executives credit the toll-free lines with bringing in nearly 45 percent of the chain's business, and they say revenues from that source increased by 20 percent in 1994.

The company also boosted business with a unique practice intended to forge partnerships with another community: travel agents. Two years ago, observing that travel agents make 12 times as many reservations for airlines as for hotels, Radisson decided to challenge the ratio by creating a frequency program. "Look to Book" encourages agents worldwide to book rooms through the travel industry's online Global Distribution System rather than over the telephone. When it receives specially coded bookings, Pierre automatically awards agents bonus points that can be exchanged for travel or merchandise such as jewelry, in-line skates, coffee makers and cameras. More than 130,000 agents in 75 countries have participated. The program, which evolved from a sweepstakes promotion and has been approved for a patent, generated a 58 percent increase in revenues in its first year and 35 percent the second year.

"Look to Book" also saves travel agents time and money. Radisson says system response averages less than seven seconds, and Pierre's Best Available Rate Search (BARS) software searching technology automatically finds the lowest available room rate for the travel agent's client.

Looking ahead, Radisson recently began offering similarly convenient online booking directly to potential guests. Through a single global site on the Internet's World Wide Web (*http://www2.pcy.mci.net/marketplace/radisson/*), consumers anywhere can make reservations at any Radisson hotel and receive confirmation by e-mail. They can also take "virtual tours" of the hotels and read about them in English, Spanish, French or German.

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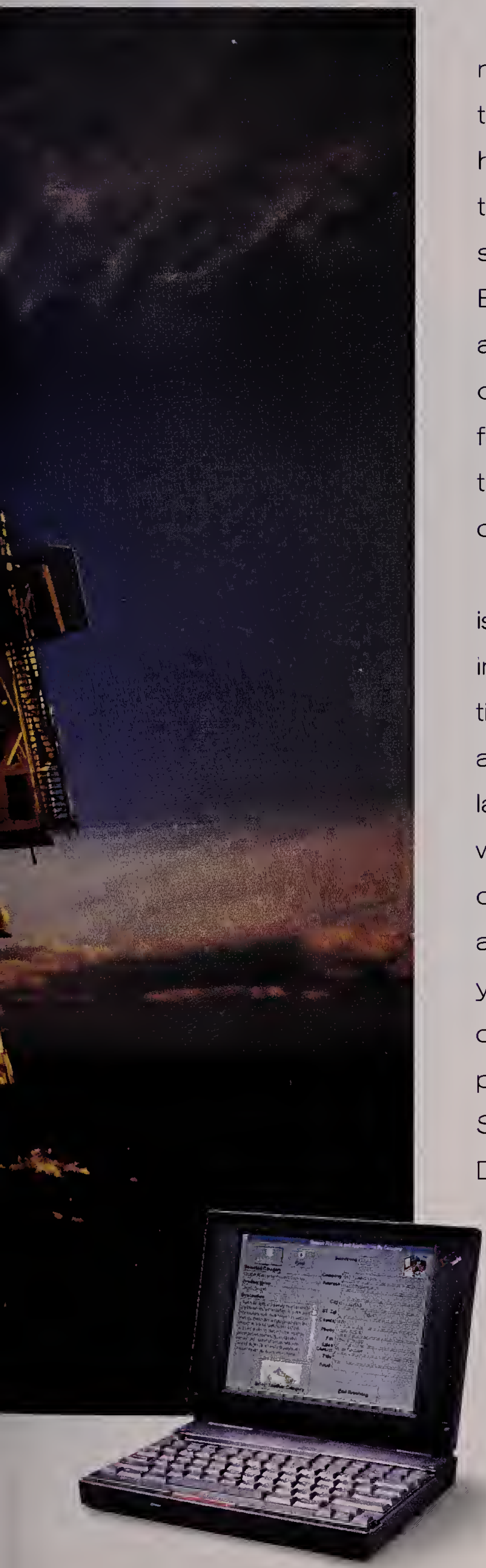

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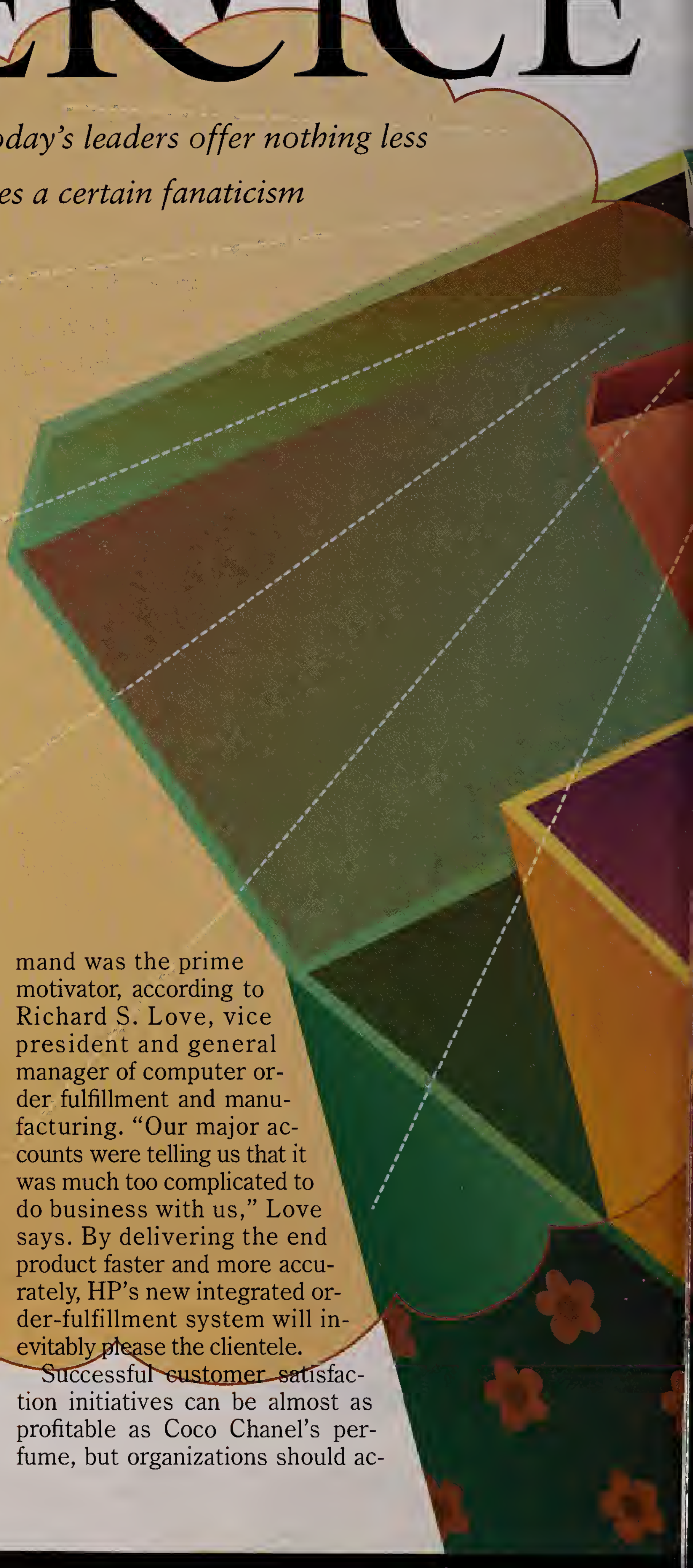
SERVICE

Good customer service no longer cuts it. Today's leaders offer nothing less than "outrageous" satisfaction. This requires a certain fanaticism and a pervasive, layered approach.

BY CAROL HILDEBRAND



A **SUCCESSFUL BEST PRACTICE IN CUSTOMER** satisfaction is like the clean fragrance of a classic perfume, elusive and pervasive at the same time. This year's CIO-100 winners in this category have embraced customer service to the extent that it has become their signature fragrance—a corporate Chanel No. 5, as it were.

Bill Barnes, **Eastman Chemical**'s director of customer satisfaction, defines the practice as "our ability to gather an in-depth understanding of customer needs and our relative performance so we can deliver on those needs." A company should therefore approach customer satisfaction initiatives in a comprehensive manner. "It needs to be integrated and it needs to be cross-functional," says Joseph P. O'Leary, a partner at Arthur Andersen in charge of the customer satisfaction practice in Chicago. "It's not owned by one function."

Insurer and financial services company **USAA** (see related story, Page 98) encourages a service mentality through training and culture, and many of the processes at the $6.2 billion firm are interconnected to best care for its client base. Customer service reps not only are empowered to answer customer concerns and respond to complaints immediately, but they also contribute to satisfaction monitoring and new-product planning by logging ideas and customer feedback onto a companywide system that is analyzed weekly. Customer information systems are critical at USAA; requests for IS service on any system used by the reps get bumped immediately to the top of the list.

It can be argued that any successful practice will end up serving customers in the final analysis. **Hewlett-Packard** is reengineering and integrating its order-fulfillment system—an important part of the supply chain (see "The Chain Gang," Page 46)—from top to bottom. When the client/server-based system is finished in late 1996, HP hopes to be able to ship an order the same day it's received—compared with today's 15-day turnaround average. While this will save on overhead costs, customer demand was the prime motivator, according to Richard S. Love, vice president and general manager of computer order fulfillment and manufacturing. "Our major accounts were telling us that it was much too complicated to do business with us," Love says. By delivering the end product faster and more accurately, HP's new integrated order-fulfillment system will inevitably please the clientele.

Successful customer satisfaction initiatives can be almost as profitable as Coco Chanel's perfume, but organizations should ac-

STARS

cept that "outrageous customer service requires fanaticism," says Gerald Loev, president and CIO of CSC I/T Management Consulting in Cambridge, Mass. "Outrageously satisfied means going well beyond what might be reasonable [customer] expectations." The most successful companies in this category do this by approaching customer satisfaction as a many-layered thing, like an onion. Each layer by itself is important, but it is the sum of the parts that makes the real difference.

On the broadest level, companies propagate a culture and value set that emphasize service. Employees immersed in this culture are trained to develop particular skills that foster good customer relations and loyalty. Finally, companies glean information about prospective new products and how customers view their efforts by mining knowledge from the information gathered in the process of building relationships.

True Values

The essence of satisfying customers lies in the ability of one human to make another happy. CIO-100 winners have created a culture of customer fanaticism by investing heavily in human "software" development, teaching an enthusiasm for service through cultural and managerial examples. This is where the fabled stories of service are born. The **Nordstrom** employee who accepted a returned item (legend has it that it was a tire) that the store didn't even stock would never have done so had the company not created a culture that not only encourages but rewards such behavior. "In general, really good customer satisfaction is not second nature [for most people]," says Larry R. DeJarnett, vice president at consultancy A.T. Kearney Inc. in Chicago. "It's a learned skill taught and influenced by the culture of a company."

"Our culture is not so much about statistics as it is about attitude and belief, caring and concern for the consequences of what you do," says Dick LeVitt, director of corporate quality at HP. "These things are softer and more difficult to measure, but they are essential." HP routinely circulates stories of customer service above and beyond the call of duty to help employees feel comfortable and energized about taking ownership of each situation. The more employees hear that such conduct is recognized and rewarded, LeVitt says, the more they will emulate it.

LeVitt relates the story of a major shipment of reconditioned machines that got off track. Parts of the shipment, which was operationally essential to a customer, were delayed at several locations. The delay was likely to cause a temporary shutdown, and the client was understandably

ILLUSTRATION BY NIKOLAI PUNIN

CIO 100 CUSTOMER SATISFACTION WINNERS...

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
AMP Inc. *Harrisburg, Pa.*	Howard R. Peiffer *Vice President, Technology*	Paul A. Timashenka *VP, Cust. Satis. & Bus. Effectiveness*	4B	30,400	*Interconnection systems*
AT&T Universal Card Services Corp. *Jacksonville, Fla.*	John McGee *Sr. Vice President & CIO*	Gerald Hines *Executive VP & COO*	30B	3,500	*Bank credit cards—Visa, MasterCard*
Cadillac Motor Car Div., GM Corp. *Warren, Mich.*	N/A	Stephen J. Seaton *Dir., Cust. Satisfaction*	N/A	400	*Automobile manufacturer*
Deere & Co. *Moline, Ill.*	John S. Gault *VP, Engineering & IT*	George S. Kalemkarian *Director, Quality Services*	9B	33,000	*Lawn- and garden-care equipment*
Eastman Chemical Co. *Kingsport, Tenn.*	A. Jack Spurgeon *VP & Dir., Sys. & Comp. Svcs. Div.*	Robert C. Joines *VP, Quality, Health Safety & Env.*	4.3B	17,495	*Manufacturer of chemicals, plastics and fibers*
Federal Express Corp. *Memphis, Tenn.*	Dennis H. Jones *Sr. Vice President & CIO*	T. Michael Glenn *Sr. VP/World. Mkg., Cus. Svc.& Corp. Comm.*	8.5B	108,000	*Express transportation*
Four Seasons Hotels Ltd. *Toronto, Ontario*	Michael Hwu *Director, MIS*	John Sharpe *President & COO*	1.7B *	20,379	*Management of luxury hotels*
GE Appliances *Louisville, Ky.*	Gregory L. Levinsky *Manager, Info. Mgmt.*	Mark L. Vachon *GM, Consumer Satisfaction*	6B	52,000	*Appliance manufacturing*
Hewlett-Packard Co. *Palo Alto, Calif.*	Robert R. Walker *Director, Corporate IS*	Richard M. (Dick) LeVitt *Director, Corporate Quality*	25B	98,200	*Measurement, computation & communication products*
Infiniti, Div. of Nissan Motor Corp. USA *Gardena, Calif.*	N/A	Ron Hannum *VP & GM, Ops. Support Group*	N/A	2,418	*Markets Nissan products in the U.S.*
Kent School *Kent, Conn.*	Tom Roney *Technology Committee Chair.*	Richardson W. Schell *Headmaster & Rector*	16M	200	*Private college-preparatory school*

Legend: Revenues $ Employees 👤 *Management revenues

continued on page 94

upset. A service rep took responsibility for fixing the situation, personally authorizing more than $20,000 in rush air-freight costs alone and sending out an on-site maintenance person to make sure that the systems arrived safely and were up and running on time. "We did it because we realized how important this was to the customer. Understanding this and acting turned the customer from very unhappy to happy," LeVitt says.

Although corporate culture is not something that can be touched, it *can* be taught. **AT&T Universal Card Services** enrolls new employees in the Universal Card University for six weeks, and company culture is inherent in each of the subjects, says Mark Queen, director of customer listening. A two-day course offered 12 to 18 months after an employee is hired teaches company values like teamwork and developing a sense of urgency about good customer service. **Cadillac** runs a similar program for its service reps, inculcating a service mentality through courses on diffusing anger and developing good listening techniques.

Companies that wish to weave a whole-cloth culture of customer-centricity should start with strong management threads. "Really, what companies need is a consistent message from the top that's reinforced with actions," says Arthur Andersen's O'Leary. At AT&T Universal Card, for example, executives are expected to listen in on phone conversations between service representatives and customers, to learn firsthand what's on customers' minds so they can keep those issues front and center.

Close Relations

The key to fostering an ongoing relationship with customers lies in three things: communication, communication and communication. The ubiquitous tool for staying in touch with customer concerns is the customer survey, and it does indeed serve a useful need. But as a recent Arthur Andersen report points out, the best companies "go beyond surveys to involve all parts of the organization in achieving an intimate understanding of the benefits customers really care about throughout their entire experience with the company."

At the **Kent School**, a 530-student private preparatory school in Kent, Conn., teachers and administrators serve two sets of customers, students and parents, through constant communication and updates on topics ranging from academic standings to choosing a college that best fits each individual student. "Have you ever heard of a school where the teacher will send an e-mail to a parent?" asks Headmaster and Rector Father Richardson W. Schell.

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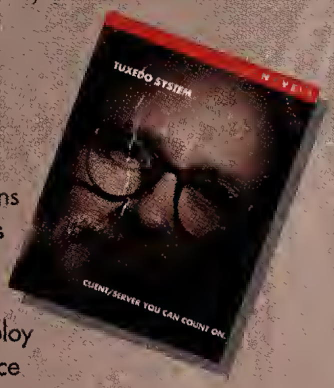

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CIO 100 Customer Satisfaction Winners

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
L.L. Bean Inc. *Freeport, Maine*	Robert L. Paquin *VP, Information Svcs.*	Scott Bryant *VP, Customer Satisfaction*	974M	3,500	*Outdoor and casual clothing and equipment*
Lands' End Inc. *Dodgeville, Wis.*	Daniel J. Rourke *VP, Information Svcs.*	Joan Conlin *Director, Customer Service*	992M	7,500	*Direct merchant*
Lexus Div., Toyota Motor Sales, USA Inc. *Torrance, Calif.*	N/A	Richard Chitty *VP, Parts, Service and Cus. Satis.*	N/A	325	*Distributor of luxury automobiles*
Motorola Cellular Infrastructure Group *Arlington Heights, Ill.*	Jack Leifel *Director, IT Svcs.*	Olga Striltschuk *Director, Strategic Quality*	N/A	7,000	*Cellular equipment & services*
Nordstrom Inc. *Seattle*	John Goesling *Executive VP, Finance*	N/A	3.9B	33,000	*Fashion specialty retailer*
Richfood Inc. *Richmond, Va.*	Robert F. Heise *Vice President & CIO*	Joe Della Noce *Sr. VP, Retail Sales & Support Svcs.*	1.3B	1,800	*Wholesale food distribution*
Ritz-Carlton Hotel Co., The *Atlanta*	Bruce Speckhals *Vice President, IS*	Pat Mene *Vice President, Quality*	N/A	14,000	*Hotel management*
Solectron Corp. *Milpitas, Calif.*	Ken Ouchi *Vice President & CIO*	Tom Kennedy *VP, Quality & Concurrent Engineering*	1.5B	8,000	*Electronic manufacturing services*
Southwest Airlines *Dallas*	Bob Rapp *Vice President, Systems*	Colleen Barrett *Exec. VP, Customers & Corp. Sec.*	2.6B	17,200	*Commercial air travel*
United Services Automobile Assn. (USAA) *San Antonio*	M. Staser Holcomb *Executive VP & CIO*	N/A	6.2B	16,500	*Insurance, financial services*
Xerox Corp. *Stamford, Conn.*	Patricia M. Wallington *Vice President & CIO*	Peter Garcia *Mgr. of Cust. Satis.*	17.8B	86,300	*Document-processing office equipment*

Schell wants communication to be so proactive that teachers are answering questions before parents and students even know they have them. "The critical element is who initiates the conversation," he says. "If the parent does, you're already starting with a strike against you. What a family needs to know is that [teachers] are so on top of the situation that they make the first call."

Kent makes that first figurative call early in the admissions process. If a prospective student is interested in drama, he'll hear from the drama teacher. If it's classics that rings a bell, the Latin teacher will be in touch, says Director of Admissions Willard Lampe.

All this high-touch activity pays off in customer loyalty. Although it's difficult to get a repeat customer at Kent (once you've gone through school, you can't go again), alumni show loyalty through recommendations. Lampe says that almost 85 percent of Kent's students heard about the school through word of mouth, and he attributes this—and a steady increase in alumni contributions—to a correspondingly high rate of satisfied customers.

But what if a company has an unsatisfied customer? Many of the CIO-100 companies view complaint handling as an opportunity to increase customer loyalty. John Goodman, president of TARP Inc., an Arlington, Va., research group, says that his studies have shown that "if a customer complains about a problem and it's rapidly fixed on the first phone call, we find higher loyalty rates than if they never had a problem in the first place."

"My boss [the president of worldwide sales] has a paperweight on his desk that says, 'I love complaints,'" says Eastman Chemical's Barnes. "We see it as an opportunity to create a positive from a negative." Eastman, whose chemicals provide the raw materials for everything from plastic partyware to photographic developers, has a companywide complaint-handling process that starts with the first customer contact. Concerns are entered into an IBM OfficeVision database, and the employee strives to resolve the issue at that first phone call. The system automatically routes more-complex problems to one of 60 customer advocates throughout Eastman; line employees must respond to a customer complaint within eight hours with either a resolution or a status report. The company also tracks time to resolution, which spurs employees to meet or beat response-time goals. Finally, Eastman surveys every fifth complainant to determine the overall perception of how complaints are handled.

A.T. Kearney's DeJarnett agrees that good communication is central to customer satisfaction. "If I as a customer have a billing problem that I don't understand and [the service rep] keeps the connection alive and tells me that

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A SENSE OF RECOGNITION

In a world of expanding markets, knowing (the right) things about your customers can be an advantage

It's somewhat ironic. IT's most useful role for many customer satisfaction practitioners lies not in designing futuristic service kiosks for the next millennium but in evoking the intimate atmosphere of the local Mom-and-Pop store.

Using IT as a support tool, customer representatives can instantly pull up customer records and histories in order to respond to queries. Some companies, such as insurer and financial services company USAA, even scan in customer correspondence that representatives can then refer to during a conversation. "Even though the representative might be in a large service center in Omaha, he can give the appearance of being in a small, intimate organization down the street," says Joseph P. O'Leary, a partner in Arthur Andersen's customer satisfaction practice in Chicago.

But using information about customers can backfire, and service leaders know that. Although it creates a positive impression when a service rep knows everything about a customer's account and dealings with the company, it's off-putting when a telemarketer announces, "We know you have a child between the ages of 4 and 6." The key is whether or not the knowledge truly serves the customer—or just the company's own marketing needs.

Cadillac's consumer relations center deals with two sets of customers—the dealers and drivers of its big luxury automobiles. Paul Schmitt, manager of consumer relations, says the company keeps that intimate link through connectivity to the dealers and a database of customer profiles on a mainframe-based system developed by EDS. "Now, when we open up a case, we can get a complete profile of both the car and the customer's [dealings with Cadillac], from warranty history to original owner to date and place of purchase."

IT can also assure consistency. Say you, the customer, talk to one representative about a question you have. Hanging up, you realize you forgot to clarify one more detail. If the company is using IT well, even though you probably will not get the same representative on phone call number two, the new rep will be able to access the same information as the first, complete with the most recent additions. Now that's technology at your service.

–C. Hildebrand

he's working it through, I'll be much more tolerant than if you work it through and don't tell me anything."

Another way to increase customer satisfaction is through education. TARP estimates that 20 to 40 percent of product problems are actually caused by the customers themselves. "A preemptive educational strike is a great way of enhancing service and also defending against dumb users," Goodman says. For example, **Deere & Co.**, manufacturer of John Deere agricultural machinery, runs an ongoing educational program with its 1,600 independent agricultural dealers. Deere encourages its dealers in turn to educate end users, the farmers. For example, one common way to damage a plow is to break frozen ground with it. By having dealers warn customers about this, Deere cultivates more knowledgeable customers and fewer complaints.

Applied Insight

All of this intense interest in customer needs produces reams of useful data, whether in the form of a database of complaints and resolutions or human knowledge about the questions customers ask most often. However, the full potential of such information remains dormant if organizations fail to exploit the knowledge that lies within.

"Collecting such information and not doing anything with it is very bad practice," says Olga Striltschuk, director of strategic quality at **Motorola Cellular Infrastructure Group.** "We want everybody to [know] what our customers think about our performance." To that end, Striltschuk put the company's database of customer satisfaction information—based on an Oracle database and a Microsoft Foxpro relational database—on one of the company's internal communications and information-retrieval systems, which are accessible through the Internet. Workers can create customized reports by themselves—by region, country, division, etc. Since senior management also reviews customer information regularly, employee interest in the database is high, Striltschuk says.

Deere collects large amounts of customer data through a staggered series of surveys throughout the life of a piece of equipment. "They work hard at taking their data [complaints, repair history, warranty information] and feeding it back into the system," says Goodman. The information gets broken out by division, and each group gets customized data about its client base.

"We're trying to create information from the data," says George S. Kalemkarian, Deere's director of quality services. For example, the agricultural division moved the muffler pipe on its tractor from in front of the driver to the side after "we found out that farmers had to strain their necks to see around the muffler when they were doing row crops," Kalemkarian says. What distinguishes customer-centric companies like Deere and the other CIO-100 winners is that they are willing to strain their own necks to help their clients till a profitable field.

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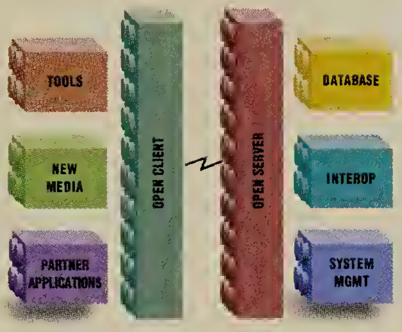

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SATISFACTION GUARANTEED

Insurer USAA understands that serving customers well doesn't mean that things will never go wrong. It means being willing and able to respond when they do.

BY CAROL HILDEBRAND

JAMES WATSON AND FRANCIS CRICK WOULD probably be able to relate to the United Services Automobile Association (USAA). Like the double-helix structure of DNA that the pair discovered, customer satisfaction at USAA is made up of multiple practices so intertwined that it is difficult to tell where one leaves off and another begins. Since the advent of now-retired CEO Robert McDermott in the mid-sixties, the company's focus has been on its customers. These days, it also includes an impressive battery of IS support tools that help keep the voice of the customer loud and clear.

"As trite as it may sound, this really is a company that puts customer satisfaction ahead of any other objectives," says Admiral M. Staser Holcomb, executive vice president and CIO. "Every proposal and business plan is first subject to the consideration, 'How will it benefit the customer?' If it doesn't do that, we won't even go on to profit considerations."

Outside authorities seem to agree. "This is one of my favorite operations," says John Goodman, president of TARP Inc., a customer satisfaction research firm in Arlington, Va. "They really do put the customer first. They get feedback, they do the analysis, and they really believe that if they respond, they'll be rewarded in the marketplace."

And rewarded they are. USAA's preoccupation with its customers, known within the company as "members," has paid big dividends for the San Antonio-based insurance and financial services organization. Between 95 and 98 percent of its surveyed customers say they are either satisfied or highly so. (USAA sends out a satisfaction survey to everybody who files a claim.) This clearly translates into higher revenues. For instance, its persistence rate, which is the rate of policy renewals or repeat business from members, hovers between 70 and 80 percent. The industry average, says Duane Divich, senior vice president of property and casualty plans and business development, is 20 percent. Within USAA's core target niche of military officers (the company was founded by 25 officers whose peripatetic lifestyle precluded traditional auto coverage), nine out of 10 active officers are members.

While surveys are important, they're not enough. At USAA, customer satisfaction is an attitude that permeates the entire company, says Sharon Fernandez, assistant manager of after-hours policy service. By instilling a customer-centric corporate culture and integrating such practices as relationship management, complaint handling, satisfaction measurement and needs analysis, not only can USAA take care of current customer needs, but "we can be a step out in front," so that when members voice needs, USAA will already have a product ready, says Divich.

PHOTO BY WILL VAN OVERBEEK

DUANE DIVICH: *USAA tries to anticipate customers' needs, developing new products before customers ask for them.*

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For instance, the company started offering builder's risk insurance, which insures folks who are building their own homes, when USAA surveyed the 400,000 members who owned house lots and discovered a nascent interest. How did the company think to do the survey? Customer service representatives noticed some scattered requests for such coverage and entered it into the ECHO (Every Contact Has Opportunity) service feedback system, a companywide DB2-based system that resides on the corporate IBM 3290 mainframes. Analytical types caught the interest during their weekly data analysis and passed it on to senior management in a weekly report. As the song says, the hipbone's connected to the thighbone—only in this case, the relationship management bone is connected to the new products bone.

Such wholesale integration begins the minute a new employee walks in the door. "As soon as you come in, they have this particular culture of quality they surround you with," Fernandez says. The effect is that each employee is imbued with a sense of service.

New auto insurance service representatives, for example, spend at least eight full weeks learning the ropes of auto policies and claims, says Jack Romines, director of training systems and services. But the classes also cover information such as courteous telephone techniques, conflict resolution, how to say, "I don't know," and what USAA customers are like demographically. The upshot, he says, "is that we teach our own corporate culture."

The classes continue with role-playing and hands-on practice under the eye of a veteran service representative. All told, it could be three months before a new rep is out on the floor manning the phones. But to USAA, the delay ultimately pays off in happier, more knowledgeable workers, and that inevitably adds to the bottom line of happier members. There's a strong correlation, Romines says, between how you treat your employees and how they treat the customers. In fact, USAA's emphasis on happier employees has earned it an industry-low turnover rate of 5.4 percent—a far cry from the 44 percent it had in the early 1970s.

> **"Our whole goal is to maintain the small-company image our members expect as much as possible."**
>
> *–Duane Divich*

There's also a strong correlation between employees' use of technology and their ability to give great service. USAA scans all incoming correspondence onto its imaging system, so reps can reference a letter—as well as the customer's profile and history with the company—instantaneously, regardless of which regional office the customer contacts. Service representatives all access the same database of 2.7 million members, so when a phone call is transferred to another rep, that person can immediately access the updated computer screen full of information, even though he or she might be half a country away. "Our whole goal is to maintain the small-company image our members expect as much as possible," Divich says. "We foster that image with seamless, personalized service," and technology is an important enabler in that service.

Divich says that technology also gives USAA the upper hand when it comes to capturing feedback from its 2.7 million members. At the end of a phone conversation with a customer, a service representative can enter into the ECHO system how the customer felt and what he or she said—good, bad or ugly. The company has an entire group that analyzes the 2,200 or so messages that come in through ECHO each week. The company then takes dual action: First, the CEO and senior officers get reports on aggregate action items, such as the builder's risk insurance, from ECHO. Complaints of an individual nature—dissatisfaction with pricing, for example—are routed back to the area that initially handled the claim to analyze and make changes for the future, if appropriate.

The company plans to increase information systems spending from $252 million to about $283 million each year for fiscal 1995 and 1996, including a migration from mainframe terminals to PCs for its representatives. It's worth the expenditure, says Divich, if it means more-satisfied customers. "We aim to up the ante," he says. "These days, you can be satisfied [with your insurance company], but if the rate is better down the street, you can go be satisfied there for cheaper." CIO

IN PROFILE

Company: *United Services Automobile Association (USAA), San Antonio*

Annual Revenues: *$6.2 billion in 1994*

Number of Employees: *16,500*

Principal Lines of Business: *Insurance and financial services*

Best Practices: *Corporate service culture, relationship management, customer loyalty, measuring customer satisfaction, customer feedback, complaint handling*

Enabling Technologies: *IBM's DB2 on IBM mainframes*

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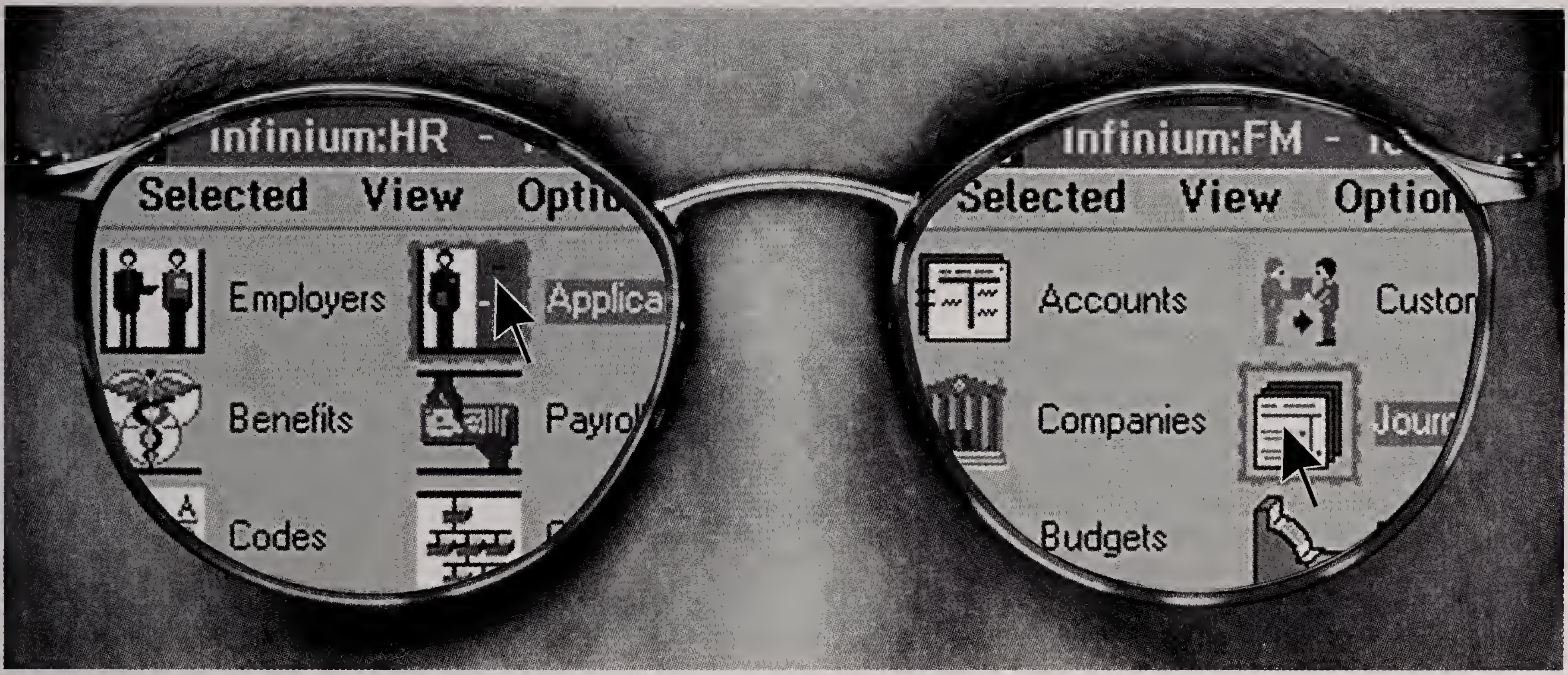

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ACCOUNTING

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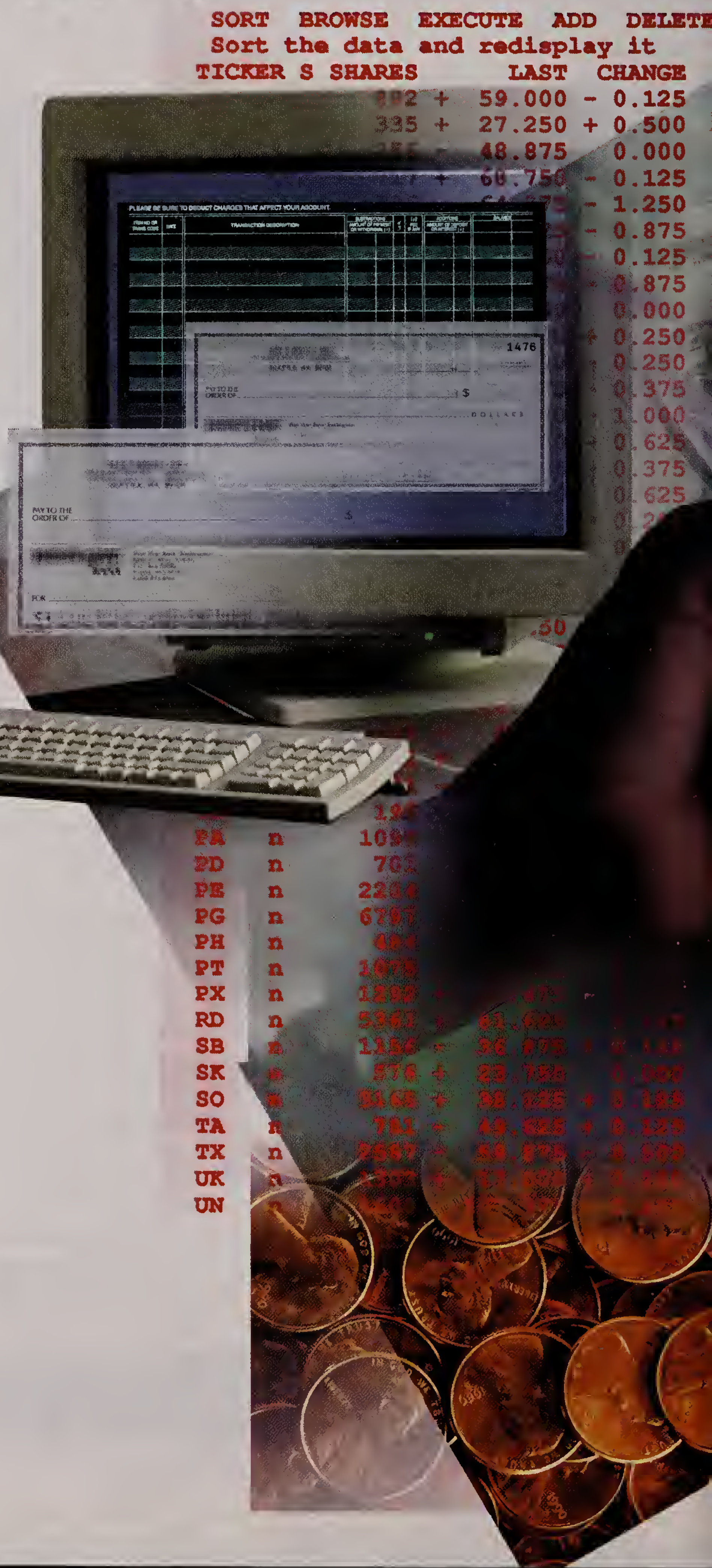
BY PETER FABRIS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ACCOUNTING AND FINANCE, TYPICALLY out-of-sight, back-room departments, may not seem like areas ripe for innovation. After all, the basics of counting beans haven't changed much over the years. Nevertheless, finance departments are in the midst of major transformations. Just about every area under the finance/accounting umbrella is undergoing intensive cost scrutiny these days. And in addition to squeezing more value out of every penny, finance departments are now expected to provide key data faster and become more involved in business decision making and strategic planning—all with fewer people and smaller budgets. By giving finance the tools to achieve remarkable efficiency gains across many functions and to improve analysis, IT is the key enabler in this difficult, often gut-wrenching challenge.

For many companies, a highly competitive global marketplace mandates lower administrative costs to preserve or increase profit margins. To achieve that, most recognize the need to shorten monthly closing cycles, and many are economizing such financial processes as payroll, accounts payable, billing, procurement, and travel and expense reimbursement. CIO-100 finance/accounting winners have made a concerted effort to excel at one or several of these areas, but none are resting on their laurels. All realize they must continue to improve these processes vigorously.

In almost all cases, efficiency improvements in finance pave the way for workforce reductions that produce significant savings. Most companies' financial staffs represent 4.5 percent of total head count, according to Robert W. Gunn, founder of consulting firm Gunn Partners Inc. in New York. In general, firms that fall below that are considered world class and have achieved noteworthy cost cutting. "Companies that have been at this the longest have cut their financial costs in half," Gunn says.

High performers typically spend 1 percent or less of

FOR CHANGE

total revenue on finance administration, but some choose to spend a bit more in return for superior analytical capabilities, says Charles B. Goldenberg, a partner with KPMG Peat Marwick LLP in Oakland, Calif. For example, although **Motorola** is widely hailed for its efficiency in finance, the electronics company decided to spend 1.5 to 2 percent of revenue on finance to boost strategic input, Goldenberg says. Motorola wants to minimize transaction-processing expenses as well as allocate more resources to collecting strategic information. To do the latter, it is using performance measures such as profit margins based on customer sets, geographic locations, products, channels of distribution, etc.

Despite new demands to cut costs, traditional record-keeping functions remain vital. With the help of IT, these basic functions can be accomplished more quickly by fewer people. Finance departments are now spending less time gathering data, says John Wulff, vice president, controller and principal accounting officer for chemical manufacturer **Union Carbide**. "With effective systems, that problem goes away to a degree."

Large companies with many divisions are flocking to a shared-services model, which allows them to consolidate day-to-day financial functions from far-flung divisions to a central location. Connected electronically with global and national divisions, a central unit handles basic accounting tasks for the entire corporation in assembly-line fashion. This structure leverages personnel and financial systems more efficiently.

Most large companies will eventually adopt the centralized shared-services model, often as part of a more extensive reengineering of business practices. The concept is "like an insourcing operation," says Wulff. His company formed a shared-services center in Charleston, W. Va., as a key element of its financial services reengineering.

In addition to saving money, shared-services units can lead to more efficient allocation of human resources. At diversified information services firm **Dun & Bradstreet**, a centralized shared-services unit has freed up finance personnel to do more high-level analysis. CFOs at D&B's various international subsidiaries "now spend less time on day-to-day activities and have more time to get involved in the strategy of the business, which is what we want them to do," says Ed Bescherer, executive vice president of finance and CFO.

The reorganization of finance operations was just one part of D&B's companywide reengineering initiated by CEO Robert Weissman in 1993. Before this effort was

ILLUSTRATION BY JEFF BRICE

How does the University of Minnesota make the grade? By concentrating on IT.

Name: Donald R. Riley **Title:** Associate Vice-President for Academic Affairs **Company:** University of Minnesota **IT Budget:** Approximately $37 million "Although our problems are not exactly the same as those of the major corporations, there is much overlap. *CIO* is a window to what's going on in the corporate world—one that is very helpful to me." **IT Responsibilities** • Plans/coordinates all academic computing and IT • Oversees approximately thirty mainframes and servers, electronic mail, and news services • Provides distributive computer and PC support, hardware/software demonstrations, network services, classroom technology, distance education delivery, on-campus support for over 20,000 Internet Protocol addresses **IT Purchase Involvement** • Approves purchasing for central systems and public labs • Coordinates purchasing with libraries • Manages & supports site licenses • Recommends vendors to various decentralized departments **Large & Mid-Range Systems** • IBM ES9000s, VAX Clusters, OEMs, MIPS processors, and one Cyber • Client/server systems: IBM RS600s and SUNs. • ATM pilots underway **End-User Computing** • 1500 UNIX workstations: SUN, Silicon Graphics, and IBM RS600s. • HP and Deskwork stations • 12,000-13,000 Macs and PC compatibles • E-mail and Internet • In-house software for the PC Windows and Mac environments • **If you want to reach** an influential audience of 80,000 information executives like Donald, make sure *CIO* is at the top of your media buy. For readership demographics and advertising information, call **508-935-4040**.

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is worth 50 people with opinions.

CIO 100 BEST PRACTICES WINNERS ...

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
Advanced Micro Devices Inc. *Sunnyvale, Calif.*	Joseph Proctor *VP, IS*	Marvin Burkett *Sr. VP, CFO & Treasurer*	2.1B	11,800	*Integrated circuits*
Amoco Corp. *Chicago*	Carl C. Williams *VP, IT*	John L. Carl *Exec. VP & CFO*	30B	42,000	*Marketer of crude oil, natural gas, petroleum products*
CCH Inc. *Riverwoods, Ill.*	N/A	John Abernethy *CFO*	579M	5,300	*Tax and business law information, software & services*
Charles Schwab Corp., The *San Francisco*	Dawn G. Lepore *Exec. VP & CIO*	A. John Gambs *Exec. VP & CFO*	1.1B	6,500	*Financial services*
Digital Equipment Corp. *Maynard, Mass.*	Richard Fishburn *CIO*	Vincent Mullarkey *Vice President & CFO*	13.5B	65,600	*Computer sales and services*
Dun & Bradstreet Corp. *Wilton, Conn.*	N/A	Ed Bescherer *Exec. VP, Finance & CFO*	4.9B	47,000	*Information services*
First Union Corp. *Charlotte, N.C.*	Austin A. Adams *Exec. VP for Automation & Ops.*	Robert T. Atwood *Exec. VP & CFO*	77B*	30,000	*Banking and financial services*
Ford Motor Co. *Dearborn, Mich.*	Charlie Szuluk *VP, Process Leadership*	Murray L. Reichenstein *VP & Cont., Ford Auto. Ops.*	128.4B	338,000	*Automobile manufacturing, financial services*
General Electric Co. *Fairfield, Conn.*	Gary M. Reiner *VP, Business Dev.*	Dennis D. Dammerman *Sr. VP, Finance*	60B	216,000	*Diversified manufacturing, services, technology*
IBM Corp. *Armonk, N.Y.*	Gerald D. Prothro *VP & CIO*	Jerome B. York *Sr. VP & CFO*	64.1B	220,000	*Information technology*

Legend: Revenues $ Employees 👤 *Assets

launched, D&B had already laid some groundwork. Bescherer had hired financial executives who were experienced business managers well versed in strategic planning, and the company simultaneously upgraded its IT infrastructure. Because D&B's disparate subsidiaries had many different hardware platforms and database systems, the company needed to establish common standards so that these systems could communicate effectively. This preparation was absolutely essential to D&B's successful shared-services plan implementation because it enabled all business units to share accounting information electronically, Bescherer says. He notes that D&B's finance and accounting budget will drop from 3 to 2 percent of total revenue by the end of the year, with shared accounting functions saving $50 million per year by 1998.

A centralized shared-services unit isn't appropriate for every company, however. "You have to look at your own size and bulk," says Carl Miller, vice president and corporate controller of **TRW**, a high-tech company that also opted for a shared-services unit. "We have over 40 automotive operating units in North America, all working under the same accounting principles and rules and all using the same language." Without that homogeneity, such a move might not make sense. Furthermore, "if we were slightly smaller, we might have looked to outsource [some accounting functions] to a third party."

For companies just making the move from centralized to decentralized organizational structures, the centrally coordinated shared-services financial model may seem contrary to their newfound organizational philosophy. Yet at **Amoco**, that combination is reality—and it works. Ironically, the company's decision to decentralize in order to give its 17 operating divisions more autonomy led it to go the opposite way in its accounting functions with a centralized shared-services unit. The company wanted to become more flexible and nimble in its decision making by decentralizing but couldn't afford the cost of duplicate administrative staff for nonstrategic functions.

A shared-services unit, which encompasses 14 separate business functions (including finance, human resources, IS, purchasing and engineering) and employs 7,000, was the solution. IS contributed the project's co-leader and provided technical support. The shared-services unit has enabled the company to leverage technology, support, training and systems development more efficiently; for example, instead of maintaining six different accounting systems companywide, Amoco now uses one—SAP America Inc.'s. Each business unit retains a "very skinny financial group" that provides strategic support and planning and evaluates new opportunities, says John L. Carl, executive vice president and CFO. Basic reporting/accounting functions for all divisions are now handled by Amoco Business Services and no longer report to Carl. Other higher-level functions such as auditing, tax planning,

In Finance/Accounting

COMPANY	CIO	PRACTICE EXEC.	$	👤	BUSINESS
Industrial Distribution Group Inc. *Tucker, Ga.*	Kay H. Mason *Sr. Mgr., Sys. & Admin.*	Peter B. Covert *CFO & Asst. Secretary*	76.7M	300	*Industrial distrib. & distrib. of MRO industrial supplies*
Johnson & Johnson *New Brunswick, N.J.*	Ed Parrish *CIO*	Clark H. Johnson *VP, Finance & CFO*	15.7B	81,500	*Health-care products*
Kelly Services Inc. *Troy, Mich.*	Christopher Arnette *Sr. VP of IS*	Robert E. Thompson *Exec. VP, Administration*	2.36B	665,000	*Staffing services*
Monsanto Co. *St. Louis*	James H. Nisbet *VP, IS*	Robert B. Hoffman *Sr. VP & CFO*	8.3B	29,354	*Agri. products, pharmaceuticals & food ingred.*
Motorola Inc. *Schaumburg, Ill.*	N/A	Carl Koenemann *Exec. VP & CFO*	22.2B	132,000	*Mfr. of electronic systems & services*
PNC Bank Corp. *Pittsburgh*	Timothy G. Shack *Sr. VP, Operations*	Robert L. Haunschild CFO	62.1B*	21,000	*Banking*
Pfizer Inc. *New York*	Cathleen A. O'Connor *VP, Corporate IT*	Henry A. McKinnell *Exec. VP & CFO*	8.3B	43,200	*Health care*
Syntex (USA) Inc. *Palo Alto, Calif.*	Scott Clarke CIO	Dick Powers CFO	N/A	2,000	*Pharmaceuticals R&D*
TRW Inc. *Cleveland*	Peter H. Janak *VP & CIO*	Ronald D. Sugar *Exec. VP & CFO*	9.1B	64,000	*Advanced technology products/services*
Union Carbide Corp. *Danbury, Conn.*	John L. Gigerich *VP, IS*	John K. Wulff *VP, Cont. & Prin. Acct. Officer*	4.9B	12,000	*Mfr. and supplier of basic chemicals*

treasury and investor relations still report to the CFO.

Amoco's restructuring illustrates the changing mission of finance departments in large companies. "Historically, [finance's] role was keeping the books and records and assuring that controls were in place," says Phil Strause, a principal of Deloitte & Touche LLP in San Francisco. Not only were analytical tools relatively unsophisticated, but finance personnel burdened by day-to-day bookkeeping and auditing had little time for strategic planning. Now that IT reduces routine transaction-processing demands on staff, finance departments are shedding clerical slots and adding positions requiring higher-level analytical skills. Relieved of mundane data-gathering tasks, staff have more time for value-added strategic pursuits, providing further incentive to achieve efficiencies wherever possible.

"If you're recording history as quickly as possible, you'll have a few extra days to be more proactive" to do analysis, says Ken Johnson, vice president and controller of Motorola. His company shortened its monthly accounting closing cycle from eight days to two by eliminating unnecessary procedures, giving staff more time for strategic planning. "You have to look at each process," Johnson says. "If it doesn't add value, you stop doing it. There's no big bang. You're looking at 100 one-percent improvements rather than one 100-percent improvement."

What makes process improvement particularly challenging is that as one procedure is improved, it often makes another extraneous or obsolete. For example, one Motorola manager was formerly required to file a monthly report based on 800 pages of data. But, thanks to a procedural change, he now files the report just twice a year, so he only needs the 800-page tome in two out of 12 months.

Although Motorola's revenues have doubled in the past five years, efficiency initiatives in finance have kept the department's head count about even. As a result of process reengineering, "we've eliminated a lot of the grunt work," Johnson says. "[Many workers] have been retrained for higher-level jobs." While striving to double its sales again by the year 2000, the company aims to hold finance and accounting staff levels steady, a goal requiring continual improvements.

This goal is achievable because, like most companies, Motorola can point to many financial processes that are ripe for economizing. For instance, the company reengineered its payroll system by implementing an online time-reporting system to eliminate keypunching. Timecard error rates, previously at 30 percent, are negligible now, and about a dozen jobs that were dedicated to correcting those errors were eliminated.

IBM also revamped payroll with a system that went online this year and covers some 140,000 U.S. employees. It includes the National Employee Disbursement System (NEDS), a distributed-processing system accessible to employees nationwide that interfaces with the main payroll system. Employees can adjust their payroll information—exemptions, 401(k) withholdings, bank account changes and the like—automatically, says Bob Belden, IBM's director of financial systems. Pay stubs are distributed electronically to about half of the workforce and can be printed by the employee if desired. This eliminates paper, printing and distribution expenses, the major residual costs of direct deposit.

TRW achieved significant savings by moving from a mainframe to a client/server-based payroll system designed with Advanced Revelation software by PowerPlay Inc. It is 100 percent PC-based and ties into the company's human resources system. Implemented in early '94, it allows the company to cut payroll checks for 75 cents each, a price that is world class based on TRW's benchmarking research and one-fifth of what it used to cost, says Miller.

"The basic architecture [is standardized], but it's flexible enough to meet the particular requirements of the operating divisions," he explains. The payoff is further sweetened by maintenance cost savings, since the client/server system is less expensive than the mainframe to maintain. In addition, the link to human resources provides access to the most current employee information such as pay rate, exemptions and marital status, thus minimizing time spent correcting payroll errors. The system also lets TRW prepare W-2s and other tax forms more quickly.

It used to take **First Union**, a bank holding company, two to four weeks to process employee travel and expense reports with a ponderous paper-based system that routed forms to several different departments. A proprietary online system now gets the job done within 48 hours, a welcome change for employees who get reimbursed much faster. They enter expenses on their PCs, and the system automatically transfers that information to the proper general ledger account for IRS reporting. Then, employees send their receipts to the disbursement center in a bar-coded envelope. The new expense reporting process is the first step in a complete reengineering of the company's accounts payable system that will enable First Union to cut staff in that area from 70 to less than 35. The project is expected to save the company $30 million over the next five years, says James Hatch, First Union's controller.

In addition to handling travel and expense reimbursements, the company's Center for Disbursement Processing—the new centralized accounts payable unit—will soon pay all of First Union's bills. The goal is to completely eliminate paper from the accounts payable process using an EDI system by Sterling Software Inc. that receives invoices and routes them to managers for purchase and expense approval via IBM's ImagePlus document imaging system. Beyond saving money by requiring fewer workers, the center will enable the company to pay its bills faster. Although at first glance that might appear to be disadvantageous, it will actually save First Union a bundle, thanks to early payment discounts. The system will also be linked to purchasing, making it easier to consolidate supply purchases and qualifying the firm for more bulk discounts. In the future, the system may be expanded to handle other types of disbursements, such as dividends to the company's stockholders and annuity payments to customers, at considerable savings.

Kelly Services, an international provider of staffing services, reengineered its billing system to improve customer service and increase efficiency. In manufacturing, there's all kinds of proof—shipping and receiving forms and the like—that a product was delivered, says Robert E. Thompson, executive vice president of administration. Not so for service industries. Kelly found that confirmation of services by the customer was one of the most burdensome aspects of its billing process. The solution was an electronic billing system supplied by Cincinnati Bell Information Systems Inc. that uses optical images of timecards—the company's proof of service.

An enhanced image of each timecard is now printed on invoices. Some customers are connected with Kelly's electronic data interchange system and receive electronic invoices; the rest get paper. "We eliminated tens of thousands of [invoice] verification requests a year," Thompson says. In addition, the system's optical disk storage provides for electronic retrieval, so customers who do call for verification can receive an answer instantly rather than in a day or two as before. The result is better service at a reduced cost.

> **"We eliminated tens of thousands of invoice verification requests a year."**
>
> *-Robert Thompson*

Companies with significant foreign sales, such as **Monsanto**, depend on their treasury departments to manage revenue in many currencies. Monsanto, a diversified chemical, agricultural and food products company, was the first to implement a globally integrated cash-management system developed by Citibank. In effect, the system, which runs in a multiplatform mainframe environment connected by a private satellite network, allows 26 Monsanto entities in 10 European and Asian countries to pool their cash so that they can borrow from and lend to each other daily. As a result, the company saves $2.5 million a year in interest payments from short-term borrowing, currency exchange fees and other bank fees.

"The system allows us to have the cash equivalent of just-in-time inventory," says Juanita Hinshaw, Monsanto's vice president and treasurer. Its initial success in Europe prompted the company to implement the system in Asia, and there are plans to expand it to Latin America. Monsanto would like to use the system worldwide, but many countries have restrictions on cross-border currency transactions that prohibit currency pooling.

All of these financial process improvements add up to significant value and contribute to the bottom line. And in today's increasingly competitive world, that's nothing short of critical. Indeed, if administrative costs are just 1 percent higher than those of the competition, says TRW's Miller, "you either lose margins or have to raise prices. We really don't have an alternative." CIO

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INSPIRED ACCOUNTING

With MUSE, hard numbers back up innovative ideas at Charles Schwab

BY PETER FABRIS

IT'S NO LONGER ENOUGH TO SIMPLY RECORD receipts, expenses and audit results. Today, finance departments must provide high-quality strategic information and analysis. "There is a great frustration in large companies about getting at [financial] information that is actionable," says Robert W. Gunn, founder of consulting firm Gunn Partners Inc. in New York. Some companies complain that "our customers and vendors know more about us than we know about ourselves," he says.

Experts say that although few companies excel at this type of self-analysis, most recognize its importance and want to improve their capabilities in this area. A few, such as discount brokerage The Charles Schwab Corp., have achieved notable results. The San Francisco-based firm uses an activity-based cost accounting system that accurately gauges the costs of business processes, providing vital knowledge to boost profitability. In the fiercely competitive financial services industry, innovation is a key to growth. And knowing exactly how much processes cost is essential both for introducing products and services and for successful strategic planning.

Founded in 1974 by Charles Schwab, who felt that brokerage firms charged excessively high commissions for stock trades, the company was a pioneer in discount brokering. Schwab is now a $1.1 billion multifaceted financial services firm with its own family of mutual funds. The financial services industry has grown tremendously over the past two decades, spawning many challengers, including a number competing head-on in Schwab's discount niche. Deregulation has enabled banks to expand their services to include mutual funds, a development adding more competitive pressure.

Although Schwab does not market itself on price alone, low commissions and fees remain central to its mission. Keeping administrative costs low, therefore, is a key to profitability. Obviously, managers must know how much a process costs before they can judge whether it is being performed efficiently. More than a dozen departments can contribute to an individual process, so to figure its cost, managers must trace the process step-by-step through each department. Determining the cost of a process in this manner is called activity-based costing (ABC), a practice recognized by many financial experts as crucial to competitiveness.

Used by about 100 employees at many levels of the company, Model for Understanding Schwab Economics (MUSE), Schwab's ABC system, has become indispensable since it was launched four years ago. Pronounced "a relatively sophisticated way of looking at the profitability of the business along several dimensions" by a CIO-100 judge, MUSE enables useful data analysis for gauging process efficiency, adjusting marketing strategy, and planning new products and services as well as cutting costs.

"The Muse is a spirit that whispers inspiration to mere mortals," says A. John Gambs, Schwab's executive vice president and CFO. "The idea was that it would provide some insight and maybe some inspiration to [Schwab employees]." It has been an unqualified success in that regard. Users can analyze the costs and profit margins of ex-

JOHN GAMBS *and* **DAWN LEPORE:** *IS collaborated with a finance team to develop MUSE.*

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Company: *The Charles Schwab Corp., San Francisco*
Annual revenues: *$1.1 billion*
Employees: *6,500*
Principal business: *Financial services*
Best practice: *Activity-based costing (ABC) system*
Enabling technology: *Model for Understanding Schwab Economics (MUSE), Schwab's proprietary ABC system of 150 software programs developed using Information Builders Inc.'s Focus*

isting and proposed products and services at different price points. Armed with this information, they can argue the merits of potential new offerings, tailoring prices and features for maximum profit.

Access to this information is invaluable because, in the rapidly changing financial services industry, innovation is more important than ever. For that reason, Schwab regularly examines new product and service proposals. "It's critical to try to react quickly to market opportunities," Gambs says. Employees at lower levels use MUSE for specific analysis of products and services, while upper-level managers use the system for big-picture analysis. For example, to plan long-range investment and strategy, managers might examine issues such as the cost of goods sold versus spending on administrative overhead. New ideas don't necessarily come from upper management, so widespread access is important.

MUSE played an important role in revamping the Schwab 500 Brokerage, a kind of "frequent flier" service for customers who make frequent securities trades. MUSE helped managers determine how much profit the company makes on different customer segments. Based on trading volume and profitability data, the company devised a scale for Schwab 500 customers that offers 10, 15 and 20 percent discounts on brokerage fees, according to the number of trades made in a year. Without MUSE, determining the trading threshold for each discount rate would have been next to impossible. By knowing the cost to execute a trade—which encompasses many business processes, from taking the order to notifying the customer of the completed trade—Schwab managers could determine how much profit they make on each transaction. Then, with customer profile data, they devised a discount scale that would attract a targeted number of customers for maximum profit.

MUSE analyzes the cost of activities based on customer segments, distribution channels and product lines. For example, the same stock purchase transaction will have different processing costs depending on whether it was made through a customer service representative or through Schwab's menu-driven telephone system. Understanding these costs allows Schwab to steer customers toward the lower-cost distribution channels. Before MUSE, the company couldn't perform the kind of detailed analysis necessary to determine which ordering method was most cost-efficient.

MUSE has given managers the ability to accurately determine the cost of many services, including taking security trade orders, giving stock quotes, managing money market investments and IRA portfolios—each of which can incur costs in multiple departments. While the ability to determine profitability on individual services is valuable for any business, it's especially crucial to companies like Schwab that market themselves as low-cost alternatives to their competitors.

"Previously, our systems measured how you were doing relative to your budget but gave no insight on your customer set, margins and profitability," says Gambs. When a manager wants to figure the costs of an individual process that cuts through many departments, it does little good to simply look at each department's budget.

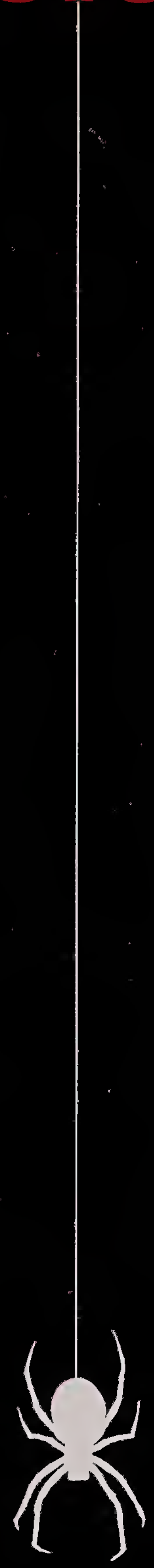
MUSE "has been provocative," Gambs says, because "it has gotten people to think about the central issues in the business," such as profit margins on products. "It has been far more widely used than we had anticipated. Originally, we thought it would be used mostly by executive management for strategic planning, but the line people have grabbed it just as much." The system has even entered the corporate vernacular as a verb. When employees propose a new product, they "MUSE" it to come up with a pricing scheme. "That's a sure sign of its acceptance in this culture," says Dawn G. Lepore, executive vice president and CIO.

IS collaborated with a finance team led by Nancy Breitfeller, vice president of business analysis, in the design of the Hitachi mainframe-based system, setting practical goals for MUSE's initial capabilities. "We intentionally limited the scope [of the system's features] to keep the investment down, but mostly to keep it simple so we could see how the organization responded," Gambs says.

Nevertheless, it was a major undertaking for IS. Created with the development tool Focus by Information Builders Inc., the system consists of some 150 separate programs. Data from several other mainframe systems, including the general ledger and brokerage systems, feeds into MUSE.

Aside from MUSE, many of Schwab's financial IT systems are outmoded, Gambs admits, though that is changing rapidly. The company has embarked on a complete financial systems overhaul, beginning with migrating the general ledger from a mainframe to a client/server system. In about a year, MUSE will also be upgraded to a client/server system that is expected to speed the first steps of data gathering and analysis. Although online analysis is automated, the preparation of the data is still mostly a manual process, Lepore says. For example, the time-reporting process used in determining the number of worker hours for each activity will be encoded so that the system will do the calculations automatically. Such improvements should make for a bullish future for MUSE and Schwab. CIO

http://www.cio.com



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PRACTICING JUDGMENT

Best practices are only such in the eyes of beholders. Our own beholders were a distinguished panel of judges who lent their time and insight to choose among the best.

SOME CYNICS AND ALSO-RANS HAVE ACCUSED lists like the CIO-100 of being mere popularity contests. We've never contended that our yearly awards were anything but subjective. Yet there has always been considerable effort to present a collection of organizations that, as a whole, best exemplify some type of business performance and the information technology that supports it. This year, in trying to single out best practice companies, popular opinion was again a significant factor.

We hunted up top experts in one or more of the best practice categories upon which we chose to focus—customer satisfaction, finance/accounting, global operations, human resources and supply chain/logistics—as well as the premier authorities in the discipline of best practice benchmarking. These 48 judges were charged with nominating organizations with business practices worthy of modeling or benchmarking. By necessity, the consultants, academics and authors tapped firms they were familiar with, many of them clients. But since many of the judges' organizations work with hundreds—even thousands—of clients, the 10 or so nominations from each have already passed a significant self-screening test. The fact that all judges got a second crack at everyone's nominations in their category helped level the playing field and further weed out the dubious candidates.

The second ballot was a weighted evaluation of the nominees' worthiness of inclusion, based on whether the practice(s) itself is considered "best" or leading edge, whether the nominee executes the practice better than others do and whether the practice has contributed significantly to the success of the organization.

What emerged was a final cut of approximately 20 organizations per category. Among them are acknowledged categorywide, world-class quality leaders such as Xerox Corp., Motorola Inc. and Federal Express Corp. But there are also firms that have been relatively unsung for their efforts and those that are outstanding at a singular but vital practice without necessarily earning a world-class reputation in the function at large. Some firms will raise eyebrows by their absence, but these either didn't have widespread support or, in a couple of cases, refused inclusion. The ones that are here will serve as worthy benchmarks for anyone wishing to improve their lot in these five crucial business-practice areas.

We thank the following judges for lending their valuable expertise, time and support.

GENERALISTS/MULTIPLE CATEGORIES

Larry R. DeJarnett, *Vice president, A.T. Kearney Inc., Chicago*

R. Michael Donovan, *President, R. Michael Donovan & Co. Inc., Natick, Mass.; author of* Reengineering the Supply Chain: Strengthening Manufacturing's Weak Links *and* Time-Based Manufacturing Performance

Tony Friscia, *President, Advanced Manufacturing Research Inc., Boston*

Brian Fugere, *Principal and national director, reengineering and change management, Deloitte & Touche LLP, Chicago*

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Gerald Loev, *President and CIO, CSC I/T Management Consulting, a division of CSC Consulting Group, New York*

David Mahlke, *Managing principal, David Mahlke Associates, Cedar Rapids, Iowa*

Irwin Mesch, *Principal, Cambridge Marketing Group, Arlington, Mass.*

David M. Noer, *Senior vice president of training and education, Center for Creative Leadership, Greensboro, N.C.; author of* Healing the Wounds

Alan T. Stutts, PhD, *Dean, Conrad N. Hilton College of Hotel and Restaurant Management, University of Houston; author of* Casino and Gaming Management

Frank M. Tedesco, *Vice president, Juran Institute Inc., Wilton, Conn.*

BENCHMARKING

Christopher Bogan, *President and CEO, Best Practices Benchmarking & Consulting Inc., Chapel Hill, N.C.; author of* Benchmarking for Best Practices: Winning Through Innovative Adaptation *and* The Baldrige: What It Is, How It's Won & How to Use It to Improve Quality in Your Company

Robert C. Camp, *President, benchmarking competency, The Quality Network Inc., Rochester N.Y.; author of* Business Process Benchmarking: Finding and Implementing Best Practices

Kate H.J. Leibfried, *Principal and managing director of benchmarking and performance measurement practice, EDS Management Consulting Services, New York; co-author of* Benchmarking: A Tool for Continuous Improvement

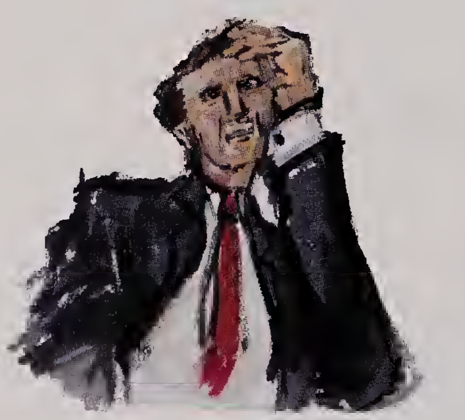
Alfred R. Pozos, PhD, *Consultant, formerly Director, The International Benchmarking Clearinghouse, a service of the American Productivity & Quality Center, Houston*

Michael Spendolini, *Founder and principal, MJS Associates, Laguna Beach, Calif.; author of* The Benchmarking Book

CUSTOMER SATISFACTION

Bruce Blaylock, PhD, *Dean, College of Business and Economics, Radford*

POWER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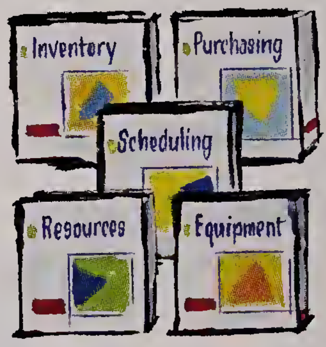
Mainframe System



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Neal M. Goldsmith, PhD, *President, Tribeca Research Inc., and head, Tribeca's Competitive Analysis Practice, New York*

John Goodman, *President, TARP Inc., Arlington, Va.*

Richard S. Mathews, *President, Mathews & Co., Stamford, Conn.*

FINANCE/ACCOUNTING

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Ira Greenberg, PhD, *Director, The School of Accountancy, University of Detroit Mercy; author of* Taxation for Accountants

Robert W. Gunn, *Founder, Gunn Partners Inc., New York*

Robert J. Hiebeler and Karin R. Barnhisel, *Partner in charge and manager, respectively, global best practices initiative, Arthur Andersen & Co. SC, Chicago*

E. Bruce Lovenberg, *Senior manager, entrepreneurial consulting group, Ernst & Young LLP, Iselin, N.J.*

William B. McMahon, *Director, The Continuous Improvement Center, The Institute of Management Accountants, Montvale, N.J.*

Waino H. Pihl, *Partner, financial industry, Andersen Consulting, Chicago; author of* Vision 2000: The Transformation of Banking and Strategies for High Performance: A Survey of Regional Banks

Phil E. Strause, *Principal, Deloitte & Touche LLP, San Francisco*

GLOBAL OPERATIONS

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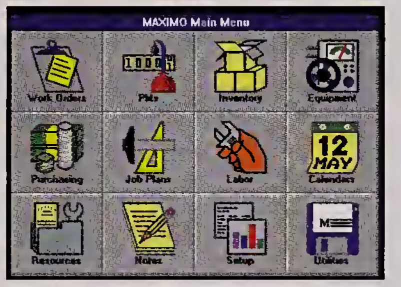
Frank Feather, *President, Glocal Marketing Inc., Wilmington, Del.; author of* The Future Consumer *and* G-Forces: 35 Global Forces

Diane M. Litynski, *Assistant professor of management, Marist College, Poughkeepsie, N.Y.*

EMPOWERMENT

Team Management

Client/Server System



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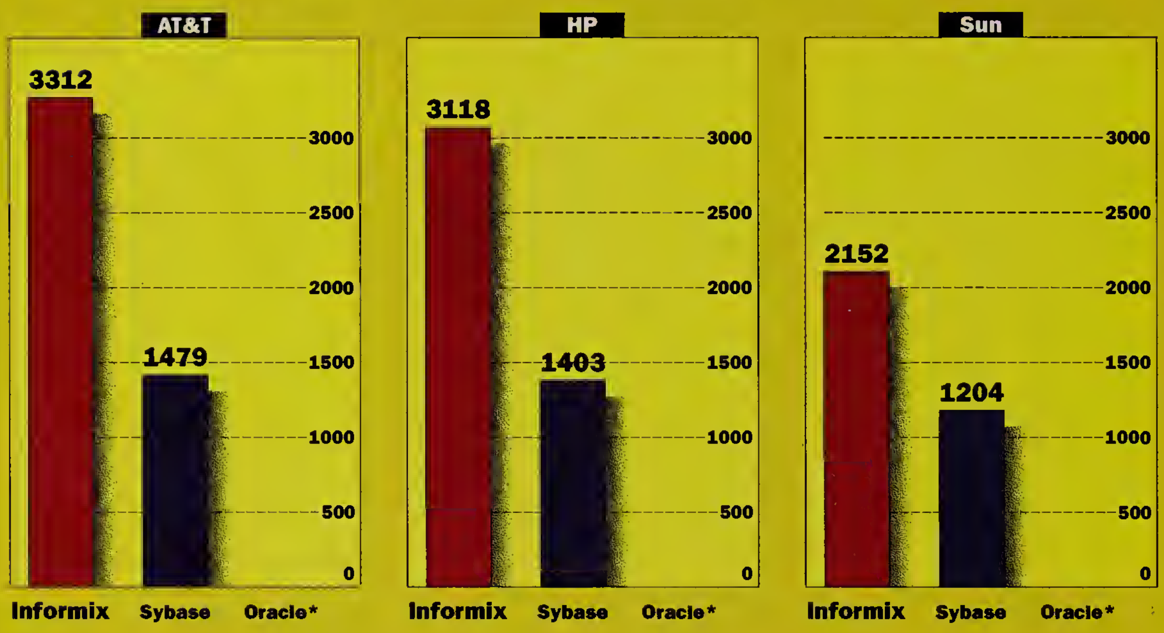

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